BUTANE-PROPANE News

No. 14 JULY 1940 25c

IN THIS ISSUE

PROPANE-AIR FOR MANUFACTURED GAS (Page 9)
TOOLS EVERY SALESMAN NEEDS (Page 25)
BUTANE EXCELS FOR HEAVY DUTY ENGINES (Page 35)

Hackney MILWAUKEE

BUTANE-PROPANE CYLINDERS

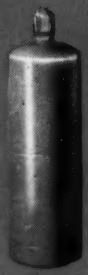
MEET EVERY STANDARD REQUIREMENT

Butane-Propane producers have used the Pressed Steel Tank Company's standard line of cylinders and tanks for transportation and storage since the origin of the industry. In many cases, where manufacturers had special problems we have helped them develop cylinders to solve those problems.

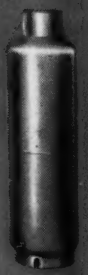
You, too, can benefit from the dependability and complete satisfaction afforded by Hackney cylinders. The advantages of maximum strength, minimum weight and uniform capacity can be as beneficial to you as they have been to hundreds of other concerns.

Hackney engineers have a complete understanding of the characteristics of gases and an intimate knowledge of metals. In designing and manufacturing Hackney cylinders, Pressed Steel Tank Company has provided minimum seam area, a single circumferential weld made by the Hackney process—X-ray control of welding procedure—heat treatment of finished cylinders.

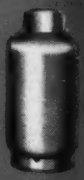
Why not have a Hackney engineer help you with your container problems? He will be glad to co-operate with you, determining the most practical and economical cylinder for your needs. Write us today for complete information. There is no obligation.



Model 10130—100 lb. propane capacity.

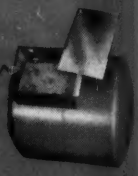


Vertical p... pane stora... or shippi... cylinder.



Above ground ASME. NBFU storage tank.

Portable propane cylinder for commercial use.



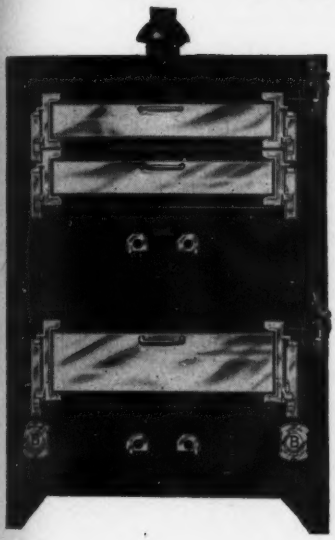
Liquid fu... tank for truck... and tractors.

PRESSED STEEL TANK COMPANY

1399 Vanderbilt Concourse Bldg., New York — 208 S. LaSalle Street, Room 1510, Chicago
1427 S. 66th Street, Milwaukee — 625 Roosevelt Bldg., Los Angeles

Containers for Gases, Liquids and Solids

The Easiest Way To Increase Your Load



FOR BIGGER PROFITS

To increase your load and thereby increase your profits, the line of least resistance is with commercial appliances where consumption is great but still economical to the owner. One of these appliances is the famous Blodgett Ovens which can be used to advantage by restaurants, hotels, bakeries, and camps, large or small. There's one for every commercial kitchen, and dealers who are not familiar with this profitable item should inquire at once. For Baking and Roasting Blodgett Ovens are supreme. They have been standard since 1848.

THE G. S. BLODGETT COMPANY, INC.
53 Maple St. - Burlington, Vt.

BLODGETT OVENS

Volume 2
No. 7

BUTANE-PROPANE News

JULY
1940

Contents for July, 1940

LETTERS 4

MAINLY BEYOND THE MAINS 7

ANOTHER MANUFACTURED GAS PLANT TURNS TO PROPANE-AIR
By T. C. Moran 9

PROPANE FINDS WORK TO DO IN THE CARLSBAD CAVERNS
By J. B. Leck 14

LPG AT THE OIL SHOW 17

BEST METHODS SOUGHT FOR CHECKING LPG DISPENSERS
By Charles M. Fuller 18

N. G. A. A. PROPOSES NEW STANDARDS 23

TRAINING SCHOOL PROVIDES THE TOOLS EVERY SALESMAN NEEDS
By J. H. DeLoria 25

AN UNDERGROUND INSTALLATION AT TWENTY BELOW . . . 27

BIG RANCHES LIKE LPG FOR FUEL 29

SELLING 32

BUTANE EXCELS AS FUEL FOR HEAVY DUTY ENGINES
By C. L. Parkhill 35

JANUARY FREEZE WARMED UP INDUSTRY . . *By M. E. McKay* 50

CONSUMER CHOOSES . . . . . *By O. D. Hall* 54

PRODUCTS 72

GAS KITCHEN WINS PRIZE 74

RESEARCH 78

THE WHYS OF THE SAFETY CODE—*Continued* 80

ADVERTISERS' INDEX 96

Publication Office: **LOS ANGELES, 1709 West Eighth Street, DRexel 4337.**
Branches: **NEW YORK, 381 Fourth Avenue, MUrray Hill 4-0698; DALLAS, 3645 Haynie Avenue, Phone 58-1764; CHICAGO, 1064 Peoples Gas Bldg., HARrison 6634.**

July, 1940. Volume 2, Number 7. BUTANE-PROPANE News is published monthly, copyright 1940, by Western Business Papers, Inc., at 1709 West Eighth Street, Los Angeles, California.

JAY JENKINS, President and General Manager; **CRAIG ESPY,** Vice President; **JAMES E. JENKINS,** Secretary-Treasurer; **ARTHUR ROHMAN,** Editor; **LYNN C. DENNY,** Managing Editor; **ELLIOTT TAYLOR,** Eastern Editor; **PAUL LADY,** Assistant Editor; **WILLIAM C. COPP,** Promotion Manager.

Subscription price: United States, Canada, Mexico and Central American countries (in advance), 25 cents the copy, one year for $1.50, three years for $2.50; all other countries, $3.00 per year. Entered as second-class matter May 29, 1939, at the post office at Los Angeles, California, under the Act of March 3, 1879.

PUBLISHERS: **GAS,** The *Natural* Gas Magazine; **HANDBOOK BUTANE-PROPANE GASES.**

★

NOW READY A NEW LIQUIGAS EQUIPMENT CATALOG FOR DEALERS ONLY

★ ★

The new P-W Liquigas Equipment Catalog is now ready for distribution to dealers qualified to receive it. Compiled after months of exhaustive study, it represents the culmination of a movement begun several months ago in which this company's vast L. P. G. engineering background was welded to commensurate merchandising resources. The ultimate end of this effective policy is that the dealer offering the P-W line can do so with the full knowledge that complete customer satisfaction is assured. As indicated by the partial list of items offered, the P-W Liquigas line is comprehensive and complete. Each item making up this line was selected because of its known soundness in engineering and design and its ability to sell on the merit of price commensurate to highest quality. This catalog is not prepared for general distribution. It is available only to those dealers prepared by policy to sell the finest equipment obtainable.

★

AN INVITATION

Parkhill-Wade invite you to visit our booths at the 1st Annual Pacific Coast L. P. G. Exposition to personally inspect this complete line.

ENGINE CONVERSIONS

★

L. P. G. HOSES & FITTINGS

★

METERS & DISPENSERS

★

ABOVE & BELOW GROUND SYSTEMS

★

TANK TRUCK METER CIRCUIT

★

I. C. C. BOTTLES

★

SAFETY TANKS

★

TRUCK TANK BRACKETS

★

PUMPS

★

CARBURETORS

PARKHILL-WADE
CONSULTING AND CONSTRUCTION ENGINEERS
1625 SOUTH ALAMEDA STREET
LOS ANGELES CALIFORNIA

LIQUIGAS ENGINEERS & DISTRIBUTORS

LETTERS

● **BUTANE-PROPANE *News* welcomes communications from those identified with the liquefied petroleum gas industry, but readers will understand that this magazine does not necessarily concur in the personal opinions so expressed.—Editor.**

Gentlemen:

Thank you for your note of May 30 with the clipping from BUTANE-PROPANE *News*.

Your publishing of candid camera snaps taken at the various L.P.G.A. conventions is of great assistance to the members of the industry in becoming better acquainted with one another.

ELLSWORTH L. MILLS

Vice President
The Bastian-Blessing Company
Chicago, Illinois

May be that is what the industry needs—better acquaintance among those who seek a common good. —ED.

•

Gentlemen:

From the standpoint of comfort to its occupants, there is no other one item in a home, as important as the heating system. Cooking stoves, water heaters and refrigerators are more in the nature of conveniences, but add immeasurably to the comfort, also.

Liquefied petroleum gas is rapidly becoming the most important fuel for these purposes, where natural gas is not available.

The LPG industry is comparatively new in most parts of the country, and offers to the legitimate dealer a wonderful field for service and profit. There is enough territory for ten times the present number of dealers and it is foolish beyond words for them to enter into price wars among themselves, especially since there is more than enough competition from other fuels and appliance dealers.

Unfortunately this industry is becoming infested with the "price-cutting parasite." Some of these short-sighted, foolish and greedy dealers are lending the purchaser the storage tank and selling and installing the appliances at cost, kidding themselves that they are building up a profitable gas load. What they are really doing is cheapening the whole industry and putting themselves in a position where they cannot get a profitable sale even if there are no dealers left to compete with them. At the present price of gas there is no large amount of money to be made from the sale of gas and what is to prevent them from cutting the price of gas to get more volume or steal the other dealers' customers? The gas price war is sure to follow the present useless one.

The manufacturers have recognized the LPG industry for its true worth and are putting on the market equipment that permits the distributor to handle any type of installation, where gas can be used. They are constantly improving their products through research departments and are selling their equipment at a price that permits the business-man-dealer to build a sound and profitable business and compete successfully with other fuels or equipment.

The proper equipment, properly sold and installed, offers the public merchandise that has no equal for the job for which it is intended.

The literature and service manuals supplied by the manufacturers will furnish the necessary information about the appliances. The gas refineries will be glad to give them information about the gas. The system manufacturers will gladly furnish information about the storage tanks and fittings. The state laws are very plain in setting forth the safety rules and regulations. The National Board of Fire Underwriters will furnish their regulations on request. There really is no excuse for ignorance.

The indifferent or ignorant dealer or salesman who sells the cheapest, converted, or unsuited equipment and has as his only thought the getting of an order or commission will soon be broke and out of business, but not before he does damage to the whole industry. One bad job gets more comment and publicity than several good jobs.

Your magazine has been putting up a good fight against this type of pest and you may rest assured that all of the legitimate and smart dealers and manufacturers are with you one hundred per cent.

E. L. MARMON

Butane Gas Company, Inc.
Pontotoc, Mississippi

You have told the story completely. All we can do is to applaud.—ED.

•

Gentlemen:

I am preparing to go into business retailing bottled butane and propane in central Missouri and would appreciate very much your giving me as much of the following information as you can.

(1) Nearest refinery and, or bulk sources of supply.
(2) Nearest source of supply for 550 and 1100 gallon storage tanks.
(3) Nearest source for truck tanks.
(4) Nearest sources for bottles and regulators.

M. F. MORRISON

Box 743
Great Bend, Kansas

Run through the pages of BUTANE-PROPANE *News and you will find among the advertisers answers to all your needs.*—ED.

•

Gentlemen:

Please send me at once six copies of the May issue of BUTANE-PROPANE *News*. There are several articles in that issue that I would like to have in the hands of all my salesmen.

H. E. CORWIN

President
Automatic Gas & Stoker Company
Dayton, Ohio

Reliance Regulators helped to initiate the commercial use of liquid petroleum gases. Some of the first installations were equipped with Reliance Regulators that were especially designed for this severe service and its delicate requirements.

The steady and rapid growth of the LPG industry is largely the outcome of the successful operation of Reliance Regulators and their exclusive features that insure safety and convenience to the customer and freedom from maintenance expense.

Special Bulletin Available

RELIANCE REGULATORS

RELIANCE REGULATOR CORPORATION
1000 MERIDIAN AVENUE, ALHAMBRA, CALIFORNIA

FOR EVERY LPG NEED!

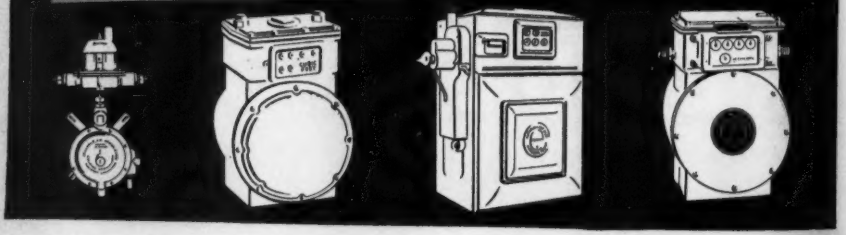
at the HIALEAH PARK PLANT . . .

Five propane gas cylinders with a total capacity of 2100 lbs. are required to handle the load adequately at Hialeah Park's clubhouse and grandstand kitchen. METRIC-AMERICAN Ironcase Meters of the LPG type are installed here, as in almost innumerable kinds of other bottled gas applications the country over . . . wherever it is desired to satisfy individual gas characteristics and requirements with the correct, dependable metering facilities.

GENERAL OFFICES • 60 EAST 42nd STREET, NEW YORK, N. Y.

AMERICAN
METER COMPANY
INCORPORATED (ESTABLISHED 1836)

1416



MAINLY BEYOND THE MAINS

LPG and DEFENSE

The national defense program now being formulated will affect, in some aspect or other, practically every phase of American industry. And it is encouraging to observe that industry's reaction to the first call to adequate preparedness has been universally patriotic, objective, and devoid of selfish motives. There is a unanimity of opinion that we can enjoy no national security until we are equipped with a defense machine capable of throwing back any conceivable form of aggression, should it ever strike by land, by sea, or by air. We should never lose sight of the fact, however, that what we are building is a defense machine, and not another monstrous military juggernaut to roll at will over the lives and the democratic principles of the people that it is built to safeguard.

The American Way, once a catch phrase booted around by every collection of interests with some axe to grind, has suddenly become a very real and very vital thing to all of us. It is the thing that must be defended, and of its defense we are all custodians. The service that LPG renders to the industries and to the homes of the nation is at once a contribution to, and a defense of, the way of life that we are pledged to protect.

It is not the Trojan Horse of the invader that we have to fear, but rather the termites of hysteria and panic. There is no conceivable reason why our own business should not forge ahead as it has been doing for the past months; provided always that we attend to that business during the accelerated times of defense, as we did during the meager pickings of depression. The place for our collective ear is to the ground, and not glued to the short wave propaganda receivers.

The very march of events is in our favor. New plants for the construction of essential materials, such as aviation and ordnance, are not to be thrown into the already congested urban centers, with their standing invitation to air attack. They will be constructed in areas

of small population and distant from the large cities. This determination has been voiced by both the President and the War Department.

Around these new industrial developments will be built the homes of the employes who will staff and man them. They will be homes in many instances remote from the gas mains. New fields for LPG service will open up as rapidly as new localities are planned and opened to construction. Whether this service is gas, or whether it is to be silently engulfed by the electrical industry will depend on our own alertness to the requirements of a swift moving pattern. Certainly a fuel system that is independent of both pipe and power lines has advantages that no industrial community planners could well overlook.

But these are advantages that we ourselves must present, and be prepared to convert into immediate realities. In so doing we will be contributing not only to the defense of America, but to the lasting welfare of its citizens.

ECONOMICAL TO OPERATE

The recent newspaper advertising campaign of Wendell L. Wilkie's Commonwealth and Southern Corp. was timed with a hopeful eye on the Republican National Convention in Philadelphia on June 24; but the story that it had to tell was one that any public utility pondering the relationship between rates and domestic consumption of fuel should take to heart.

Analyzing its electric properties, C & S reports that the average rate for electric service in all homes in the U. S. during 1939 was 4¢ per kw. hr.; this corporation's rates averaged 2.93¢ per kw. hr. or 25% below the national average. For the same year the average consumption of electricity per home was 897 kw. hr. for all domestic installations; C & S customers used an average of 1226 kw. hrs., which was 35% above the national average.

The Commonwealth and Southern's policy reduced to simplest terms has been to make appliances easy to own, and economical to operate through "producing progressively larger quantities of electricity . . . available at progressively lower rates for many years."

As a starting point toward an enlightened rate policy, liquefied gas distributors may profitably consider this extremely fundamental premise. And just to make it handy to check, let us remind ourselves that electricity at 4¢ per kw. hr. is equivalent to propane at 24¢ per pound, whereas 2.93¢ electricity competes with LPG at 17.5¢ per pound. At the present average prices charged for LPG, which are certainly below 17.5¢ per pound, our favorite fuel should be an odds-on favorite, even in Commonwealth and Southern territory.

Another Manufactured Gas Plant Turns to Propane-Air

By T. C. MORAN

Assistant General Superintendent, Gas Department, Central New York Power Corporation, Syracuse, N. Y.

UNTIL 1937, the gas business at Ogdensburg in St. Lawrence county of northern New York was operated solely by the local company. Since that time, it has been included in the larger operating group of properties composing the Central New York Power Corp. On Jan. 4, 1939, the substitution of propane-air gas for coal gas was begun.

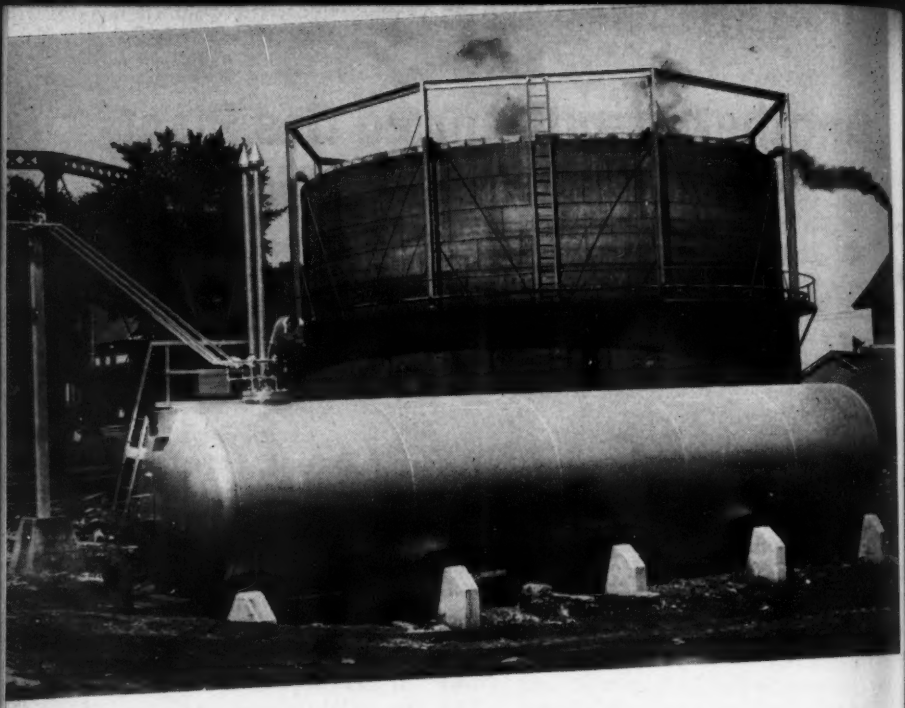
The trend of the business in the five years preceding the change is typical of the recent history of many of the smaller isolated manufactured gas properties in that it has become progressively worse.

The first year's results on propane indicate that this trend has been stopped and the situation greatly improved by the 4.2% increase in sales and 18.5% reduction in production and distribution expense, to offset a 7.9% decrease in revenue due to rate reduction.

Propane was selected for use rather than butane primarily because of the severity of winter temperatures in Ogdensburg. Thirty-five below zero has been experienced and twenty below is not uncommon. Its higher vapor pressures were desirable in eliminating the necessity for tank repressuring in the winter, and reducing the necessity for artificial vaporizing to a few days in the year. All other times, the liquid storage tank receives its heat of vaporization from the atmosphere, reducing the fuel expense for vaporization to a negligible item.

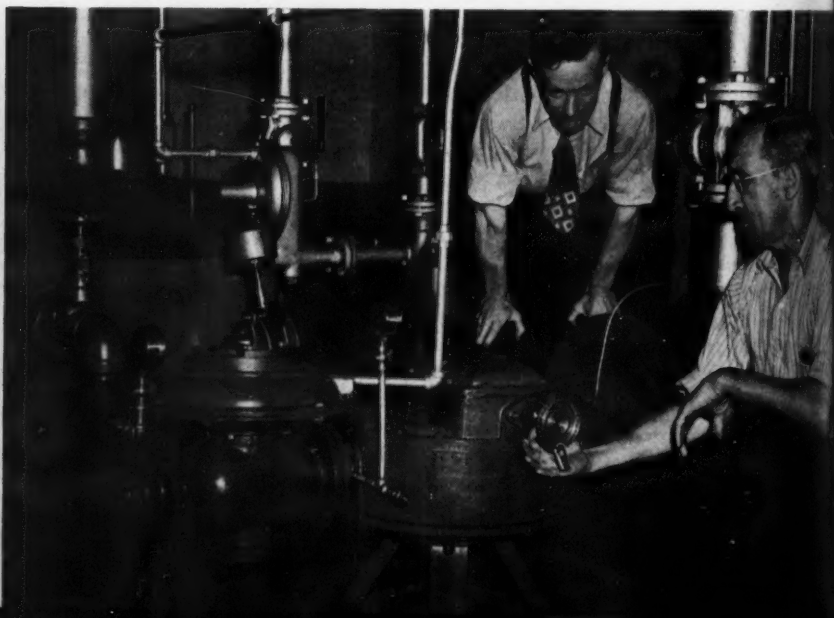
The thermal value of the retort coal gas distributed in the past was 585 B.t.u. There were several reasons why our new supply is at 900 B.t.u. The first of these was appliance adjustment. A calculation made on the basis outlined in the A.G.A. publication "Mixed Gas Research," together with the results of appliance tests, indicated that a propane-air mixture of slightly higher than 900 B.t.u. gave best performance.

In respect to holder capacity, the higher B.t.u. gas is an advantage. This property had two low pressure wet holders, one 50M and one 30M. The 50M was condemned because of deterioration due to extreme age. Had the 585 B.t.u. standard been retained, some part of this 50M capacity would have had to be replaced. However, at 900 B.t.u. the therms storage of the 30M holder was sufficiently greater than at 585 B.t.u. to permit a reasonable protection and holder investment was made unnecessary. Fig. 1 shows propane storage tank and gas holder.



ABOVE: Fig. 1. A 20,000-gal. propane tank at Ogdensburg plant of Central New York Power Corp., and 30 M c.f. manufactured gas holder.

BELOW: Fig. 2. Air filter and air-gas tempera-ture equalizer; final vapor pressure regulator mixing valve; centrifugal compressor.



The same feature of the high B.t.u. gas became an advantage in the distribution system. Mains had become badly fouled with tar and naphthalene in the past, due to improper scrubbing and condensing. It would have required expenditure of considerable time and money to properly clean up the main system before changeover if it had been attempted to distribute 585 B.t.u. propane-air gas, whereas with a 900 B.t.u. mixture the thermal capacity, at the same pressure on the distribution system, became 50% greater than at 585 B.t.u. (considering change in specific gravity from 0.42 to 1.19).

Mixing Is In the Mains

Fig. 2 shows some details of mixing apparatus. Mixing is direct into the mains for about 18 hours of the 24; after midnight the equipment is shut down, and the very small night send-out is from the holder. There are two reasons for this. In certain instances of conversion to high oxygen gas internal corrosion of the distribution system, meters and services were found to be severe and costly. This is aggravated by the presence of liquid H_2O with the high oxygen content gas. The mix as produced is 36% propane and 64% air, and under conditions of atmospheric humidity and temperature, and main temperatures prevailing most of the year the temperature of the mix is above dew point in respect to water. This means, that we throw down no condensate in the distribution system while making direct into the mains; whereas, if all gas is passed through the wet seal holder, it tends to approach saturation and water is thrown down in the distribution system. Another reason for mixing direct into mains is one of pressure. The distribution system is low pressure, and the station regulator at the plant is weighted for 4.4 in. The holder initially gave 3.0 in., but has been weighted to 4.2 in. which is the maximum it can safely carry. The station regulator is of automatic boosting type which boosts the discharge pressure to 5 in. on peak loads, giving approximate uniform pressure at 4.4 in. over the load centers and extreme ends of the distribution system. The mixers produce at 18 in. pressure and this permits carrying boosted pressure by discharging direct through station regulator to distribution system. Otherwise, it would have been necessary to install a booster at holder outlet to take care of peak load requirements. Low pressure centrifugal compressors are used in this type of plant and are highly desirable due to the low first cost, low maintenance and operating expense and quiet vibration-free operation. The 9000 cu. ft./hr. units installed operate on only 1.0 hp. motors.

Atomizing Type of Fogger

The fuel as received in tank cars carries the usual odorant which is satisfactory for straight propane operations, but it was felt that after mixing with nearly two parts air added odorant is necessary. The rate is 4 gals. per million cu. ft., part of which is added with the fogging oil. Fogging is by atomizing type of fogger, injected at the station regulator outlet. Serious drying out of joints and bleaching of meter leather has not occurred.

Definite evidence of corrosion has been found on the interior of the holder. Specimens of metal cut from the lift a year apart indicated somewhat accelerated rusting. To alleviate this condition, 600 gals. of a high boiling petroleum oil have been sprayed on the inside of the lift and allowed to fall back onto the surface of the water under the lift, leaving about a 5/8 in. thick film of oil on the water. This is to be repeated as needed to make up evaporation of the oil, which is slow.

Fig. 3 shows the unaccounted-for gas has decreased from 200M to 155M during the first year, on the basis of M per mile of 3 in. equivalent main per year, by months. The marked decrease is attributed to two causes: First, the distribution of gas of 1.19 specific gravity in substitution for a gas of .42 specific gravity. At the same pressure, the flow of gas through an opening is inversely as the square root of the specific gravity. Secondly, intensified efforts were made to locate and repair all of the old existing leaks.

Meters, which are opened in routine maintenance have the diaphragms reoiled with a special disinfectant treated oil. This is to forestall the development of organic growth on meter leathers reported to have been experienced elsewhere. To date no such growth has appeared.

Saturation tests have been taken on the gas in the distribution system and indicate that only in the early spring, when atmospheric temperatures greatly exceed ground temperatures, does the gas stream approach saturation in the mains. During early winter months, when main temperature is higher than atmospheric temperature, the per cent saturation becomes very low. Drip pumping has practically been eliminated. Tests on April 19, 1939, showed 88 to 95% saturation. Three months later this had dropped to 67%.

Appliance work was grouped in the following four stages:

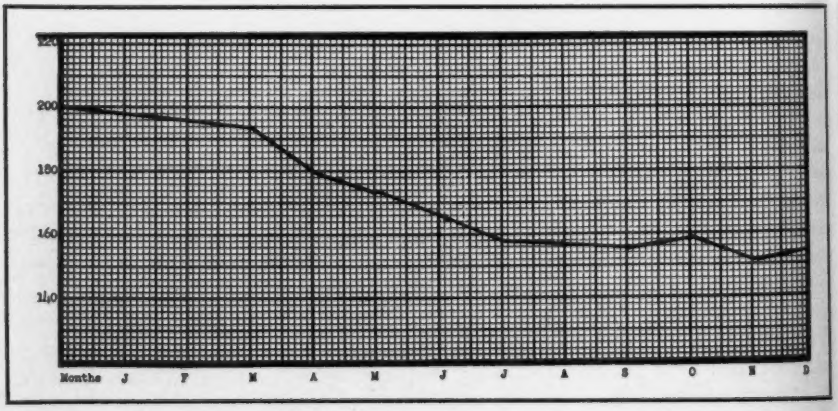
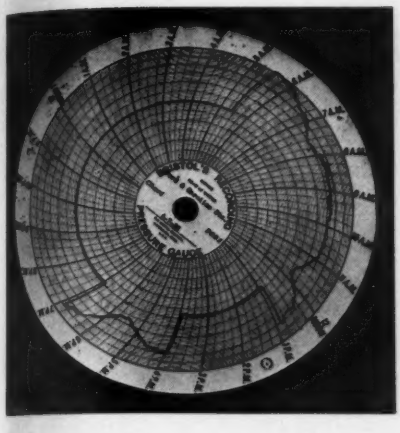
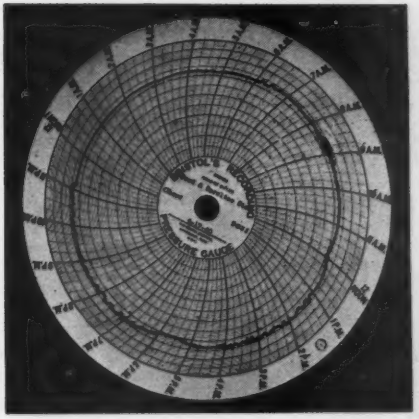


Fig. 3. The unaccounted-for in M c.f. per year per mile of 3-in. equivalent main, showing the reduction with use of propane over manufactured gas month by month for the year 1939.



Pressure at load center before change to propane-air gas.



Pressure at load center after change to propane-air gas.

1. A survey of all appliances in use.
2. Drilling out of all burner ports smaller than No. 34.
3. Adjustment of appliances with new gas.
4. Follow-up and clean-up of carry-overs.

The appliance survey proved of value in determining the extent of port drilling necessary, the nature and quantity of parts, fittings, orifices, adaptors to be kept on hand. The survey revealed that the equipment in use was in general very old, and in poor condition. Modern appliances, automatic water heaters and refrigerators were almost totally absent. Practically all ports were drilled to No. 34; in many cases, particularly oven burners, additional crossover or ignition ports of smaller drill size were added. This drilling operation was about completed before the new gas was turned in.

Adjustments of the appliance on the new gas consisted of minor spud and air adjustments. Air adjustments were also easily made. Special velocity reducing spuds were unnecessary.

Rutz top burner lighters were replaced entirely. Some dental and special torches were also replaced completely. Oil burner pilots were given especially prompt attention as were all commercial and industrial installations.

The final stage consisted in handling a certain number of call backs, and drilling in additional ports in some particularly stubborn oven burners. After six months, this type of work had been cleaned up and service requests back to normal.

It should be noted, that these liquefied petroleum gas-air mixtures are definitely less flexible in appliance adjustments, than the coal or water gas which they replace. They require finer adjustments in general, the permissible adjustment tolerance is less, but when properly adjusted they give very good performance.

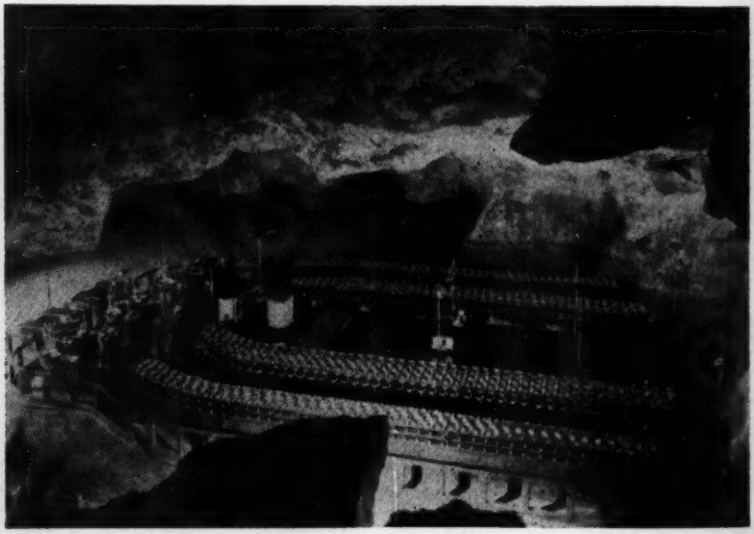
Propane Finds Work to Do In the Carlsbad Caverns

By J. B. LECK
President, The Cavern Supply Co., Inc.
Carlsbad, New Mexico

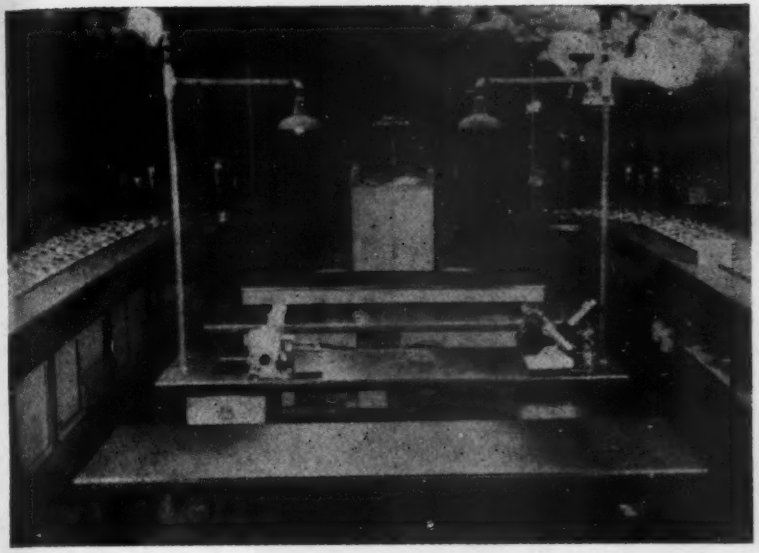
PROPANE plays an unique and important part in the operation of one of the most unusual lunch rooms in the world, located 750 feet beneath the surface of the ground in the famous Carlsbad Caverns, which lie beneath the Guadalupe mountains in Eddy county, southeastern New Mexico.

For seven years Flamo propane gas has been used to heat the coffee urns and to provide heat for the warming cabinets which pre-heat the coffee cups. Lunch is served on the cafeteria style, it being prepared in advance and placed on trays on the counters, and the choice of drink is served near the end of the line. Through the six lanes as many as 800 complete lunches have been served in less than 20 minutes.

All the counters, rails and most of the work tables are constructed of concrete and all metal used is either stainless steel or metalized zinc steel. The temperature in the Caverns is



The novel underground lunch room in Carlsbad Caverns.



Flamo makes coffee and warms the cups at Carlsbad

56° and, due to this fact, it has been found necessary to heat the coffee cups so that the coffee would stay hot while the lunch is being eaten. To accomplish this, three stainless steel cabinets were constructed, each capable of holding 450 cups. The cups are put in wire baskets and placed in the heated cabinets and are hot to the touch when the coffee is served. These are the cabinets which are heated with Flamo bottle gas, as are the seven coffee urns, in which it is possible to make 70 gallons of coffee at a time.

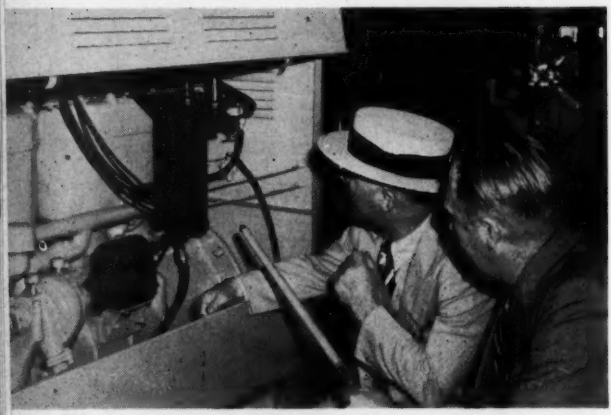
In a small tunnel just off the lunch room is the dish-washing department. Installed therein is a Hobart automatic dish-washer, the water for which is also heated with Flamo.

Carlsbad Caverns have for years been the marvel of all the many thousands who have visited their mysterious rooms where are to be found countless formations of fantastic designs, frozen cascades, delicate fairylands, yawning chasms and giant stalagmites and stalactites.

The Caverns were discovered in 1901 by a cowboy named Jim White, who was attracted to the opening of one of the caves by the flight of great hordes of bats which flew out just at dusk.

The six-mile trip through the Caverns now is along lighted trails. It takes about five hours to cover that distance, during which time the guides explain the formations and point out the principal points of interest. It is at the noonday resting period when lunch is served and propane is given its opportunity to add to the conveniences of guests and attendants.

Among the Oil Show Exhibitors



AT TOP: Mr. and Mrs. W. W. Banks and Mr. and Mrs. W. W. Gibbons attend the Dallas Tank & Welding Co. Inc., exhibit as Dr. A. S. MacGee, hatless, of Skelly Oil Co., Chicago, looks on.

SECOND FROM TOP: Floyd C. Swindell, Buda Engine Sales, Inc., Tulsa, Okla. and R. R. Wyker, Ensign Carburetor Co., Ltd., Huntington Park, Calif. Mr. Wyker is demonstrating the Ensign carburetor in service on the Buda engine.

BELOW (left): Tillie Sharp; C. B. Coombs, advertising department, Kansas City; Mrs. F. O. Sharp, home service demonstrator; A. H. Menuet, Skelgas, Kansas City (back to camera).

LPG at the Oil Show

NOT a few of the 250,000 visitors to the 1940 Petroleum Exposition, held in Tulsa, Okla., May 18-25, were given a special awareness of the liquefied petroleum gas industry by means of the exhibits of several manufacturers who displayed products identified with this industry.

Nearly every exhibitor making equipment for liquefied petroleum gases had samples on display and was prepared to answer questions on the fuel. The total number of exhibitors at the show was 628. This is the largest number of companies ever to exhibit at an oil show.

Skelly Oil Co. had what might be called a consumer exhibit for Skelgas and Skeltane products of the company. In this exhibit liquefied petroleum gas was shown operating the modern kitchen range, the hot water heater, the Servel Electrolux refrigerator and gas lights. The booth was attended by Mrs. F. O. Sharp, home service demonstrator, who baked and passed out cookies; Vance J. Law; A. H. Menuet; W. D. Lance, and E. L. Gilmore, all of Kansas City.

Both the Buda Co. and Le Roi Engine Co. displayed drilling and pipeline engines operating on butane. The engines were fueled from nearby tanks. An attendant explained that many oil operators were changing from diesel driven engines to butane.

The Bastian-Blessing Co. demonstrated the superiority and lower cost of liquefied petroleum gases over acetylene gases for cutting purposes. The demonstration consisted of cutting various thicknesses of steel with oxygen and propane as well as oxygen and acetylene so that the visitors could make visible comparisons in speed and quality of cut. The Rego KX and KXX cutting torches were used.

Dallas Tank & Welding Company exhibited skid tanks and underground butane systems and also displayed pictures of some of the tanks which the company has fabricated. The tanks shown in the exhibit were enameled white for display purposes.

McNamar Boiler and Tank Manufacturing Co. also displayed in their booth pictures of butane tanks fabricated by that company.

The cutting demonstration of The Bastian-Blessing Co. Visitors are viewing the demonstration through a window of green glass. R. E. Poethig, assistant sales manager of Bastian-Blessing is shown at right.

Best Methods Sought for Checking LPG Dispensers

THE latest problem for a weights and measurement official has arisen from the rapidly increasing use of that liquefied petroleum gas commonly known as butane. Service stations are installing and using outfits to meter this product from storage tanks into the fuel tanks of passenger buses, transport trucks, and other automotive equipment.

Liquefied petroleum gas must be kept under pressure at all times, unless it has been cooled to an extremely low temperature. If you were to open the nozzle of the dispensing hose into your test measure in the customary manner of testing a gasoline pump, not a drop of liquid would reach the bottom of the measure. It would vaporize immediately on leaving the end of the nozzle.

What we must have, however, is a portable outfit that can be taken into the field to test the meters exactly as they are used. We must ascertain not only that the meter, itself, is accurate, but that the entire outfit is installed in such a manner that correct measure will be delivered at the end of the hose.

In working out the following contemplated methods, we have received the cooperation and assistance of engineers and experts from all branches of the industry—from the producers, refiners and distributors of petroleum products, to the equipment manufacturers.

Bear in mind that we have not as yet built this equipment. We expect to do so and conduct active tests in the field within the next few months.

In the past, the principal objection to utilizing a weight method in the field has been the difficulty of ascertaining the specific gravity, so as to know the weight per gallon, at the time of test.

The California Natural Gasoline Association has adopted a tentative standard method for determination of specific gravity of a liquefied petroleum gas by hydrometer. This was developed by a research engineer of one of the major oil companies, and they have been using it for several years with entire satisfaction. We have been trying it out and it appears to be the answer to our problem.

Briefly described, it consists of cooling a sample of the product down to a temperature below its boiling

● **CHARLES M. FULLER, sealer of weights and measures for Los Angeles County, California, in a paper, "Contemplated Methods of Testing Meters in the Measurement and Sale of Liquefied Petroleum Gases," presented before the Thirtieth National Conference on Weights and Measures in Washington, D. C., June 4-7, discusses the increasingly important requirements of bureaus of standards in checking measurements of LP gases and the progress that is being made by the sealers in developing equipment therefor. (Abstract by BUTANE-PROPANE News.)**

point at atmospheric pressure. The sample is then introduced into a pre-cooled vacuum flask and the specific gravity taken under equilibrium temperature conditions by means of a hydrometer. By the use of conversion tables, the specific gravity and weight per gallon are computed at the temperature of the liquid as it passes through the meter.

The sample is taken from a tank or line connection through a valve with a large opening to prevent vaporization due to drop in pressure through the valve seat. For the same reason, the line connection with the apparatus is short and made up of ¼-in. pipe or larger.

Cooling is accomplished by passing the liquefied gas through a coil of soft copper tubing. This coil is placed in a pyrex glass vacuum flask, and CO_2, commonly known as "snow" or "dry ice," used for a cooling bath. In this manner it is possible to lower the temperature of the liquid to 70° F. or 80° F. below zero.

The sample flask, an unsilvered pyrex glass vacuum flask, is pre-cooled by filling it with a sample from the coil, and allowing it to remain for a minute or two. It is then discarded and the test sample drawn. A period of about a minute should be taken in drawing, bringing the level up to a point where the hydrometer floats freely. The thermometer shall be adjusted so that the immersion mark coincides with the surface of the liquid. The sample is stirred by moving the stirrer through the full depth of the liquid until the temperature is uniform. Readings are then made until three identical gravities are obtained.

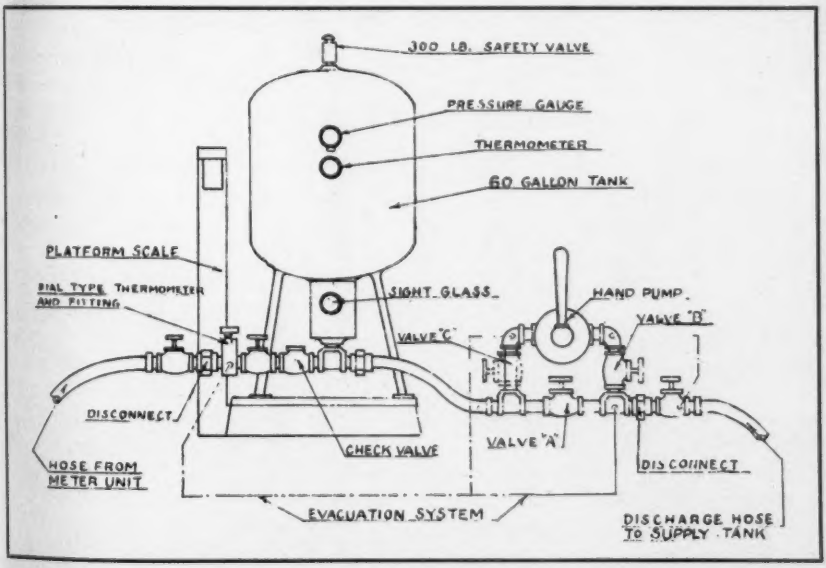


Fig. 1. Schematic Equipment for Meter Testing by Weighing Method.

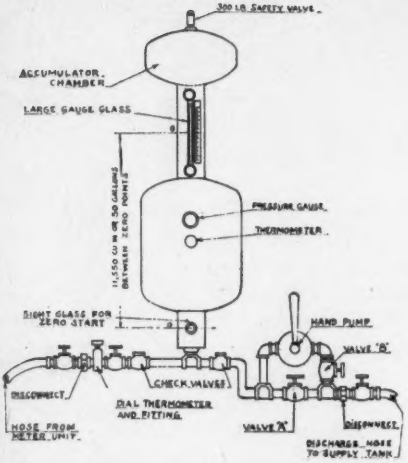


Fig. 2. Schematic Diagram of Equipment for Meter Testing by Discharge to Calibrated Tank.

The vacuum flasks, special hydrometers, thermometers, and other pieces of equipment that make up this outfit, can be obtained from a number of supply houses. It is simple in construction and operation. Bulletin TS-392 issued by the California Natural Gasoline Association outlines a complete detailed description and set of conversion tables.

Now that we have a means of ascertaining the weight of a gallon of liquefied gas, there still remains the need of a container into which the products can be passed from the meter and weighed.

We contemplate an arrangement as shown in Fig. No. 1. A portable platform scale will be used with an SR of not over two ounces. The diagram, for the sake of clarity, shows the hand pump and piping for emptying the container back into the storage tank, at one side of the scale, but this will be constructed and placed on the scale platform.

The diagram shown is schematic; in other words, it is used to convey the general idea, but it is entirely probable that some changes in piping and valves may be found necessary when it is being constructed and placed in use.

In order to secure a uniform condition, we believe it advisable to fill the tank and discharge it immediately to secure a "wetted" surface in the equipment. Then determine the tare weight of the equipment.

Deliver 50 gals. through meter, close meter valve, disconnect line, and weigh. Subtract tare weight to obtain net weight of delivery and from specific gravity determine actual number of gallons in proving tank.

Since proving tank, when full, will be at higher pressure than supply tank, opening valve "A" should expell all liquid from proving tank. Pump and valve "B" are provided should it be necessary to pump out prover. Sight glass is provided to determine if tank is empty.

Unloaded or tare weight should be checked before starting each subsequent test.

If repeated disconnecting of delivery and discharge hose, with consequent spilling of small quantities of liquid to atmosphere, is considered a fire hazard, an evacuation system may be added, as shown by broken lines. With all valves closed, operation of hand pump will vaporize and remove liquid remaining in hose disconnect chambers.

This proposed weight method has many desirable features. You have

ascertained the specific gravity and know the weight per gallon of the liquefied gas. You know that the delivery from the meter is in your container, and you know the net weight of that. You can now compute the number of gallons and compare that figure with the meter reading.

The other contemplated method utilizes a calibrated tank of peculiar form (Fig. No. 2) to provide an accumulator chamber for vapor.

A ribbed gage glass is set in the narrow column between the two chambers. The unit is constructed to provide a 50-gal. capacity between the zero starting line in the sight glass at the bottom of the container and the 50-gal. indication at the center of the gage. Pressure gages, thermometers, valves, piping, etc., are provided as shown.

Here again, this diagram is schematic, and some changes may be necessary when the outfit is constructed and placed in use. It may be desirable to provide a connection on the accumulator chamber for initial charging of the system with vapor as a compression medium.

Deliver 50 gals. through the meter to secure wetted surface in equipment and discharge until liquid level in sight glass is at bottom of zero point.

With valves "A" and "B" closed, deliver 50 gals. through meter and read true volume of delivery on large gage glass.

Drain to bottom zero and system is ready for subsequent tests. Pump and valve "B" are also provided in this unit should it be necessary to pump out container in returning liquid to storage.

There are a number of variables that must be taken into account in using these testing units. If readings of the thermometers show that the liquefied gas passing through the meter is at a different temperature from that in the proving tank, a correction must be made for that factor. If a pressure is built up that will cause some of the entrained vapor to liquefy, allowance must be made for that. Care must be taken to insure that the hose delivery line from the meter is full of liquid before the test is commenced. We expect to learn a lot in the next year.

We are planning to build an experimental outfit that will combine both methods: a calibrated tank mounted on a scale. That will give us a double check on every test run, and we will be able to decide which procedure gives the most positive results.

Regulation for the Future

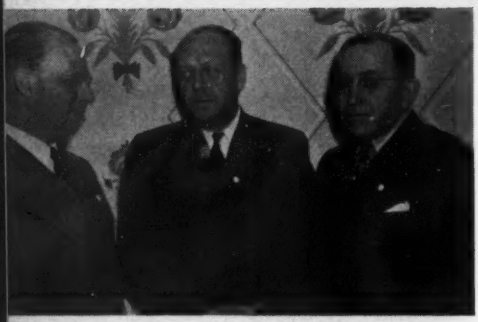
In considering liquefied petroleum gases, we are dealing with products that have many variables. Steps must be taken looking forward to the proper regulation of measuring devices used in its distribution, for the use and sale of butane-propane mixtures is increasing by millions of gallons each year. However, we must proceed with care and make sure that our requirements are reasonable, and that it is possible to comply with them, before issuing specifications, tolerances and regulations.

It is my recommendation that an extensive study and experimentation be conducted of this subject during the year, so that at the next Annual Conference we will be prepared to consider a tentative code.

Ideas on Natural Gasoline Supplanted Even War Talk At the Convention In Tulsa, Okla., May 15-17

AT TOP: James W. Vaiden, Stea... Oil Co., Tulsa; C. R. Williams, Continental Oil Co., Ponca City, chairman of the technical committee; C. E. Wharton, Hanlon-Buchanan, Inc., Longview, Texas; William F. Lowe, secretary, N.G.A.A.

SECOND FROM TOP: Officers of the Natural Gasoline Supply Men's Association—W. Woobank, Woobank Pump & Machine Co., Tulsa, president; L. S. Allen, National Tank Co., Tulsa, first vice president; A. J. Kerr, Pittsburgh Equitable Meter Co., Tulsa, director.



THIRD FROM TOP: H. R. Linhoff, Richfield Oil Corp.; P. E. Fluor, Fluor Corp., Ltd., and John Rogers, The Cooper-Bessemer Corp., all of Los Angeles, Calif.

AT BOTTOM (left): H. W. Harts, chairman of convention program committee, and Fred J. LaFortune, both of Warren Petroleum Corp., Tulsa.

N. G. A. A. Proposes New Standards

AT the May meeting of the Natural Gasoline Association of America, held in Tulsa, Okla., C. R. Williams, Continental Oil Co., chairman of the technical committee, presented proposed tentative specifications for liquefied petroleum gases that, if approved, will supplant the existing ones.

The newly proposed specifications for butane-propane mixtures, for commercial butane and for commercial propane follow:

Butane-Propane Mixtures

Definition. — Butane-propane mixtures shall be hydro-carbon products composed predominantly of mixtures of butane and/or butylenes with propane and/or propylene and shall be free from harmful quantities of deleterious substances.

Vapor pressure.—The vapor pressure at 105° F. as determined by the liquefied petroleum gas vapor-pressure method shall not be in excess of 225 lb. per sq. in. gage pressure.

Product designation.—Butane-propane mixtures shall be designated by the vapor pressure at 100° F. in pounds per square inch gage. To comply with the designation the vapor pressure of mixtures shall be within +0 lb., —5 lb. of vapor pressure specified. For example, a product specified as 95 lb. LPG shall have a vapor pressure of at least 90 lb. but not exceeding 95 lb.

Ninety-five per cent boiling point. —The quantity evaporated at a temperature of 34° F. shall be 95% or more by volume as determined by the open-cylinder weathering test.

Sulfur content.—The product shall be free of hydrogen sulfide and shall not contain mercaptans, or other sulfur compounds, of a corrosive nature. The unstenched product shall not contain total sulfur in excess of 15 grains per 100 cu. ft. of vapor as determined by the test for total sulfur in liquefied petroleum gases.

Water content.—The product shall be free of mechanically entrained water.

Odorization.—A sufficient quantity of an odorizing agent, of such character as to positively indicate the presence of gas down to concentrations in air of not over one-fifth the lower limit of flammability by a distinctive odor, shall be added by the manufacturer.

Commercial Butane

Definition. — Commercial butane shall be a hydro-carbon product composed predominantly of butanes and/or butylenes and shall be free from harmful quantities of deleterious substances.

Vapor pressure.—The vapor pressure at 105° F. as determined by the

FACING PAGE (lower right): "City boy makes good in the country," is the way George A. Bunn, resident of the Natural Gasoline Association opened his remarks in presenting the Hanlon Award for Meritorious Serice to the Natural Gasoline Industry to Dr. George Granger Brown, of the University of Michigan.

liquefied petroleum gas vapor-pressure method shall not be in excess of 75 lb. per sq. in. gage pressure.

Final boiling point.—The quantity evaporated at a temperature of 34° F. shall be 95% or more by volume, as determined by the open-cylinder weathering test.

Sulfur content.—The product shall be free of hydrogen sulfide and shall not contain mercaptans, or other sulfur compounds, of a corrosive nature. The unstenched product shall not contain total sulfur in excess of 15 grains per 100 cu. ft. of vapor as determined by the test for total sulfur in liquefied petroleum gases.

Water content.—The product shall be free of mechanically entrained water.

Odorization.—A sufficient quantity of an odorizing agent of such character as to positively indicate the presence of gas down to concentrations in air of not over one-fifth the lower limit of flammability as a distinctive odor shall be added by the manufacturer.

Commercial Propane

Definition. — Commercial propane shall be a hydro-carbon product composed predominantly of propane and/or proyplene and shall be free from harmful quantities of deleterious substances.

Composition.—The composition of commercial propane shall be at least 95% propane and/or propylene by liquid volume as determined by the combined results of the vapor-pressure and mercury freezing tests.

Mercury freezing test.—The residue as determined by means of mercury freezing test shall not be more than 2% by volume.

Vapor pressure.—The vapor pressure at 105° F. as determined by the liquefied petroleum gas vapor-pressure method shall not be in excess of 225 lb. per sq. in. gage pressure.

Sulfur content.—The product shall be free of hydrogen sulfide and shall not contain mercaptans, or other sulfur compounds, of a corrosive nature. The unstenched product shall not contain total sulfur in excess of 15 grains per 100 cu. ft. of vapor as determined by the test for total sulfur in liquefied petroleum gases.

Water content.—The product shall satisfactorily pass the standard cobalt bromide test.

Odorization.—A sufficient quantity of an odorizing agent of such character as to positively indicate the presence of gas down to concentrations in air of not over one-fifth the lower limit of flammability by a distinctive odor shall be added by the manufacturer.

◆ ◆

Ruud Manufacturing Co. Acquires Welsbach Co.

The Ruud Manufacturing Co., Pittsburgh, Pa., recently announced that they have acquired the water heater business of the Welsbach Co., effective May 1, 1940.

In the announcement the Ruud Co. states that "for more than fifty years Welsbach has produced and marketed a notable line of gas appliances; we will continue to manufacture and promote Welsbach water heaters and accessories and Welsbach gas range burners." The Ruud Co. will maintain the standards established by Welsbach for their products, and will expand the promotional activities.

Training School Provides the

Tools Every Salesman Needs

By J. H. DeLORIA

Skelgas Company, Kansas City, Missouri

THE second of a series of sales and service schools to be conducted in the field by Skelgas field representatives was held in Peoria, Ill., the first week of April under the direction of W. B. Ockerhausen, Illinois State Skelgas supervisor, assisted by A. J. Chantry, a district representative.

The first of these educational programs was held in Fond du Lac, Wis., in February of this year and the plan is to arrange for further schools regularly, both in early Spring and in the Fall of the year.

Their purpose is not to build an organization of "a million men to make a million sales," but on the contrary to cut down the mortality rate by arming the new Skelgas salesmen with adequate knowledge and necessary sales tools that will enable him to quickly establish himself upon a sound footing and become a permanent member of an aggressive, energetic sales organization in a fast-growing, young industry.

It is one thing to hire a man, give him sales tools, put him in a given territory and wish him luck. It is quite a different matter to educate him in the use of those tools. Yet, that is what is required if his ultimate success in the liquefied petroleum gas sales field is to be assured.

Therefore, 24 new salesmen, hired through personal contact and the use

This group of potential salesmen is now proving in field activities the efficacy of the new Skelgas Co. plan of training men in specially directed schools. Out of 24 men originally selected for the course in Peoria, Ill., but one failed to develop. The others went into immediate positions.

of local newspaper classified columns, were brought together in Peoria for three days of intensive training. No attempt was made to teach salesmanship, but rather to educate them in the use of available sales material and give them elemental instruction in service, particularly insofar as the use of such knowledge would help promote sales.

Actual working demonstrations were employed. Minor corrections and simple adjustments were made by the students themselves, both in equipment and appliances and each, in turn, was required to lecture on each subject covered as well as submit written papers on a series of questions after each session.

Of the 24 men employed only one failed to complete the course of training, at the close of which each demonstrated his sales ability with remarkable ease which indicated retention of considerable knowledge of Skelgas service and appliances acquired during the course.

The three days of schooling were closed with a banquet, preceded by the showing of an educational sales talkie-movie and an address by a representative of the Kansas City Skelgas office.

All 23 of the men immediately engaged in Skelgas sales work in previously arranged connections and are reported making excellent progress.

One of the first dispensing stations of its type, the original plant of Truck Fuels, Inc., Fresno, Calif., consisted of one 5000-gal. storage tank, but in five years this station has grown into a modern 15,000-gal. plant that supplies butane to both industrial and domestic users in the San Joaquin Valley. Equipped with twin pumps, for wholesale bulk distribution into large tank trucks and trailers, and Pittsburgh Equitable Meters, the combination unit will pump 100-gals. a minute. A system of 40 lubricated plug valves, with Fisher automatic controls, enables the plant to dispense butane in four directions simultaneously. The "island" at the front of the station is equipped with a specially built 300-lb. meter in a Parkhill-Wade patented metering circuit which dispenses butane to domestic tanks and trucks.

An Underground Installation at Twenty Below

THE installation of an underground LP gas system in the middle of a bitterly cold winter is a problem requiring expert knowledge and often involving difficulties.

The Northwest Hydro-Gas Co., of Minneapolis, had an interesting experience under such circumstances in February at Osseo, Minn., when burying a system for the Olympia cafe. It was a Hydro-Gas system, and said to be the first of that kind installed in Minnesota.

Due to the location of the basement and adjoining buildings, the underground container had to be placed at the rear of the lot which was 60 feet away from basement. The weather at this time was very severe and there were 3½ to 4½ ft. of frost in the ground. The frost was removed by the use of coke fires in the holes. A jack-hammer dug through the frost in the holes near the building.

The method employed for the piping was to dig holes at intervals and tunnel between. One hole had to be dug underneath a drain pipe and the ground was very hard. The installation was held up for two extra days because of this one operation, and therefore the other excavations for the piping as well as the container were open to this very severe weather. The morning the pipes were laid, the temperature was 20° below zero, and there were 2 to 3 in. of frost in the bottom of these holes and tunnels.

The two water lines and the gas line were laid as close together as the fittings would permit, the piping being at a depth of 6½ ft. and the con-

This Osseo, Minn., cafe wanted LPG—winter or no winter—and it got it!

tainer reaching a depth of 8½ ft. The soil here was a sandy loam with a sand sub-soil.

The pipes and the container were then covered, and after a period of two hours the water was turned on and left circulating through the heat exchanger for another period of several hours before turning on the gas. This was done to give the ground around the pipe and container a chance to regain some of its heat before turning on the gas. The water for this cafe is supplied by a well in the basement and had a temperature of around 60°, and upon its return from the heat exchanger it had dropped down to about 40° after the first few hours. The water was left running continuously for the first four or five days and after that there was very little change in the temperature after the water came from the heat exchanger.

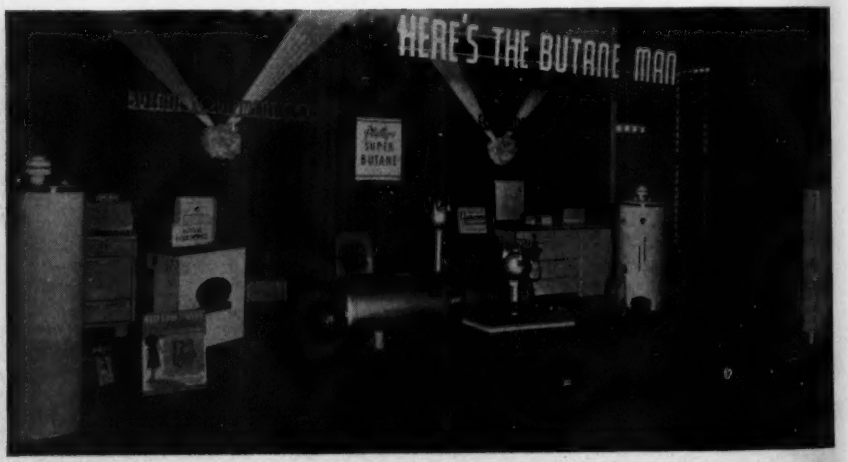
The system functioned perfectly from the time it was first turned on, and there was considerable cold weather after its installation.

◆ ◆

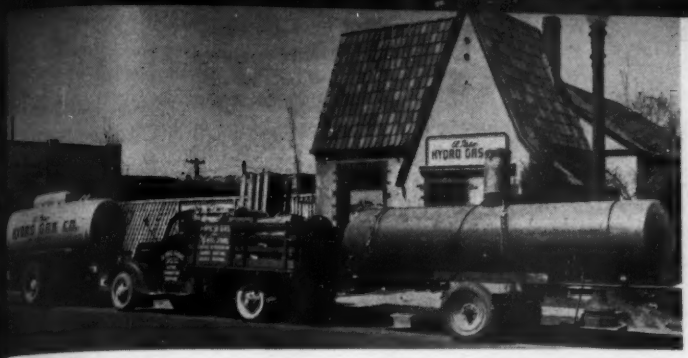
Canning Demonstrations Awaken Women's Interest in Butane

A series of canning demonstrations, sponsored by the Indiana State Grange and the Kerr Glass Manufacturing Corp., was inaugurated May 29 by the Pinola and Pine Lake Granges, near Westville, Ind.

Under the direction of Margaret Murphy, practical methods of fruit and vegetable canning are demonstrated for the visitors, with emphasis being placed upon liquefied petroleum gas and appliances for use in rural sections and towns where natural gas is not available.



Charlie Clark and Mack Garvin found this booth at the March Southwestern Exposition and Fat Stock show, Fort Worth, Texas, productive of much new business for their Butane Equipment Co. This organization is now engaged in a large expansion program throughout the Fort Worth area.



An 1114-gal. El Paso Hydro-Gas Co. system ready to leave company headquarters for the W. H. Hightower ranch near Deming, N. M.

Big Ranches Like LPG for Fuel

IN the wide, open spaces of western Texas and New Mexico it has not always been possible for ranch owners to enjoy many comforts that are common to city homes, but the introduction of liquefied petroleum gas has changed this situation. Now, cooking, heating, refrigeration, water heating and lighting with butane have given country life invaluable conveniences.

The El Paso Hydro-Gas Co., of which L. M. Cunningham is general manager, has specialized in butane installations on ranches and other large properties, and has found them to be big fuel users. Illustrative of such installations are the following:

First may be cited the Ladder ranch near Hillsboro, N. M., owned by Sam S. Lard, with a 3450-gal. Hydro-Gas system that is 31 feet long and four feet in diameter. Fuel is supplied to the main ranch home and all ranch buildings.

The Walter Hightower cattle ranch, 20 miles west of Deming, N. M., has a 1000-gal. system serving gas to a gas range, a 140-gal. water heater and 6 space heaters and gas lights.

Another user is the Juarez Mercantile Co. Juarez, Mex., which manufactures food products, roasts coffee, etc.

The Escobar Agricultural School, operated by Escobar Bros., accommodates 150 students. There are 14 houses in this institution, all piped from a central plant.

One of Mr. Cunningham's customers, John I. Hallet, of Hillsboro, N. M., uses butane in a gold mining operation, to power draglines, pumps,

L. M. Cunningham (general manager of El Paso Hydro-Gas Co., El Paso, Texas), standing beside bottles awaiting refilling before shipment.

engines, a gold washing machine, and other equipment. This customer uses about 5000 gals, of butane per month.

The Corralitos cattle ranch, located 10 miles out of Las Cruces, N. M., is another large user of butane for domestic purposes, including cooking, water heating, refrigerating and heating and lighting. Also, the mess hall is equipped with two gas ranges.

Approximately every 30 days Mr. Cunningham fills 70 cylinders for Comidianistos De Chihuahua, of Chihuahua, Mexico. These are brought in for refilling, filled from a 14,000 gal. tank. The loading rack accommodates five of the cylinders at a time.

Mr. Cunningham has the agency for Hydro-Gas in six counties in New Mexico and three in Texas. He recently reported he had 215 domestic and industrial installations.

◆ ◆

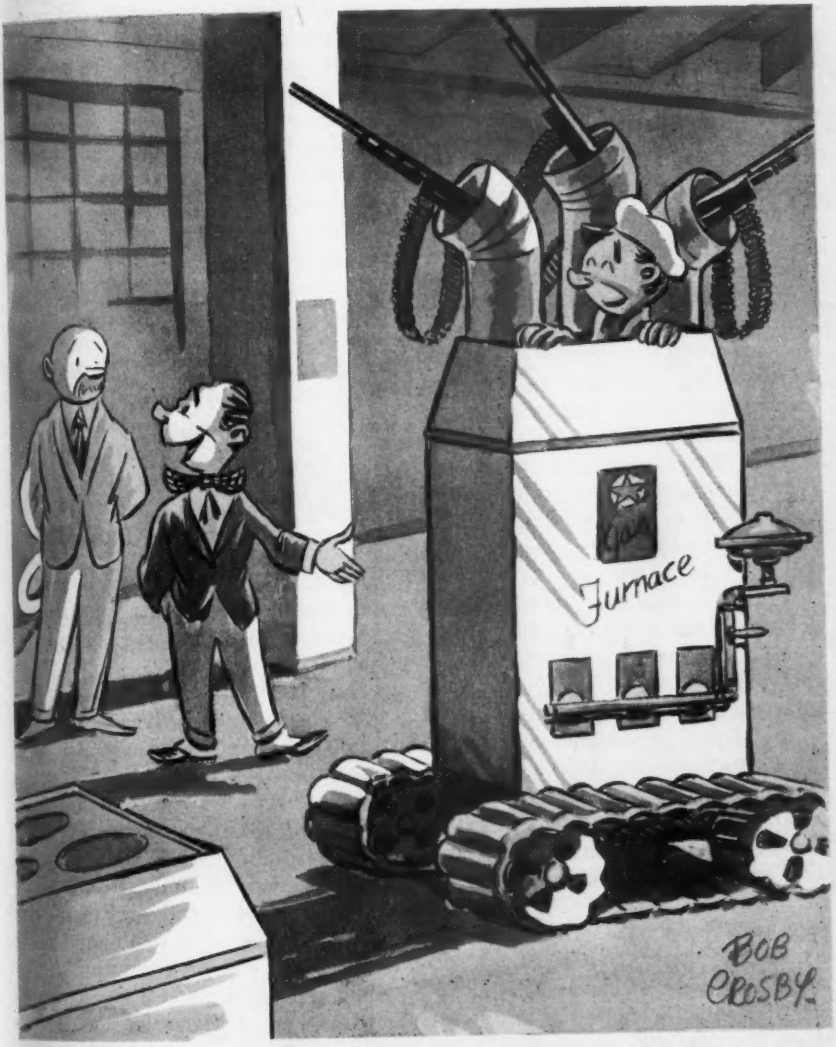
Food Show Develops Sales For Arkansas Butane Co.

Three direct sales and a substantial list of first-class prospects was the result of an exhibit booth of the Arkansas Butane Co., Inc., at the Little Rock, Ark., "Foods and Modern Home Show" in April, according to Mrs. T. T. Burgess, secretary of the company. (Photo shown below.)

A special inducement to hold the interest of prospects was contained in a $15 discount coupon which could be applied upon the purchase of a butane system within 30 days. It was felt that the show offered a valuable form of advertising and means of contacting potential customers.

This exhibit was popular at Little Rock food show.

DOTTED LINE ROSCOE . . . by Bob Crosby



"You See, Mr. Knudsen, Our Furnace Dep't. is Co-Operating with the National Defense Program."

SELLING

Sales Strategy

HOW do you handle objections? Do you wait until you are confronted by them, and then try to devise some way to get around them? Or do you look ahead and plan a line of strategy which will insure a sales victory? If you want to win a real blitzkrieg, the planned line of attack is the only one that will bring sure results. You must approach the problem as the commander-in-chief of an army approaches it: foreseeing the obstacles and difficulties you are going to meet, and providing means to overcome them.

Old Nathan Bedford Forrest, able but unschooled Confederate general, had one rule for winning battles: "Git thar fustus with the mostus!" Anticipating from past experience and his own good common sense what his foe was going to do, he always managed to arrive at an advantageous spot just a little ahead of his enemy. A long list of victories attests the worth of his simple strategy.

And it is a method of attack that can be adapted to salesmanship, too. The smart salesman knows from experience that certain objections are sure to arise sooner or later in the course of his presentation. So he "gits thar fustus with the mostus" by bringing up those objections and answering them before the prospect has a chance to bring them up.

"Now you are probably thinking, Mrs. Jones," he might say, as an illustration, "that this appliance is going to cost you a lot more to operate. But our experience shows the opposite to be true. Look at these figures."

An objection disposed of that way is not going to rise up later on to defeat you.

General Grant, when he couldn't defeat General Robert E. Lee by frontal assault in the summer-long campaign which brought the Civil

War to an end, kept sliding around him and forcing him to take up new positions until he was trapped in Richmond, Virginia.

The same sort of strategy might be applied in handling the prospect who thinks what you have to offer is all right, but thinks she would prefer your competitor's merchandise. Having failed to convince her by direct demonstration, you may slide around this objection by finding out exactly what she has in mind, and then proving to her that what you have fills the bill. If you can get her to admit that your merchandise meets your competitor's in every essential detail, you are on your way to a sale.

It is now pretty well established that the recent invasion of Norway

by German forces was for the purpose of diverting attention from their real point of attack.

And recognition of objections which can safely be ignored will similarly save a salesman from sales set backs. The price objection is a case in point. This objection, as every one who has studied salesmanship knows, is not a valid one. But it is one that is difficult to ignore. Once you are drawn into a discussion of it, your sale is almost sure to be lost. On the other hand, properly handled, you can often turn this objection to account by using it to demonstrate how the prospect cannot afford to not have your product.

Not infrequently a clever general has turned probable defeat into certain victory by capitalizing on his weaknesses. Napoleon, for instance, in his earlier campaigns realized his great weakness in point of numbers. Taking advantage of the speed that a small, mobile army has, he marched swiftly to meet segments of his foe's forces and defeated them before they could form a common front against his inferior numbers.

Many a product has been sold in somewhat the same way by capitalizing on what at first sight might be objected to as disadvantages. An extreme example of this is in the electric range where the undesirable afterglow of the element when it is turned off is sold as "stored heat." It is obvious no energy is actually "stored" to produce this condition, yet clever salesmanship has turned this into an advantage of that type of appliance.

Are You "Without Wax?"

Centuries ago, the Romans had an unusually excellent wax for mending broken vases. It was so good that when a mended vase and a new one were placed side by side, only an expert could tell them apart. To distinguish between them, Roman merchants marked new ones "sincere"—or "without wax."

In the important business of selling today, sincerity is an asset. Insincerity is a most serious handicap. At its best, insincerity is only a thin shell which prospects easily penetrate. To live sincerely—to be genuine, honest, and fair and square in all dealings is the way to win confidence, friendship and selling success!—*Reprinted from sales letter of Philgas Department, Phillips Petroleum Co.*

Edwards Gas Appliance Dealers Meet at Hydro-Gas Plant

Nearly a hundred Hydro-Gas dealers, salesmen and service men gathered in San Antonio on April 6 for an all-day conference. The dealers operate under the franchise of Edwards Gas Appliance Co. of San Antonio and are located in the southern half of Texas from El Paso to the Louisiana border line, a span of over 850 miles.

The morning was spent going through the plant of the Southern Steel Co., manufacturers of Hydro-Gas Systems where were seen all phases of testing and manufacture.

Following a luncheon at a downtown hotel, they gathered for a meeting presided over by George Isbell, secretary of the Southern Steel Co., who is in charge of sales and promotion. Loyd White, vice president of the company in charge of engineering, outlined the development of the liquefied petroleum gas industry and discussed and demonstrated the important exclusive features of Hydro-Gas Systems. M. E. McKay, field representative, gave first hand experiences in the sale, installation and operation of underground systems. Claude B. Aniol, of Aniol and Auld Advertising Agency, outlined the complete Spring and Summer sales and promotion campaign for the company, which is planned to be the most extensive program ever launched for a liquefied petroleum gas system. He explained how dealers can cash in on the interest being created. Following each talk the meeting was thrown open to general discussion.

The meeting was brought to a close with a dinner at the Plaza Hotel in San Antonio, presided over by R. L. Edwards. A photo of the group is shown below.

◆ ◆

Butane Growth Prompts Firm To Give Up Other Lines

The firm of Sasia and Wallace Corp. was established in 1933 in Bakersfield, Calif., to handle agricultural implements, and butane gas and appliances were added two years later. By last year the butane end of their business had increased to such an extent that the farm implement lines were given up and now the firm devotes its entire energies to serving its 500 customers and developing new ones.

Among the uses to which butane is applied by Sasia and Wallace customers are irrigation, sterilizing of dairies, stationary engines, tractors, trucks and household and industrial needs. Tests with butane-fueled tractors in Kern county have shown many instances where as much as 33-1/3% has been saved by burning butane over the fuels formerly used.

A full line of LPG appliances is carried.

South Texas Hydro-Gas System dealers, sales and service men at luncheon of all-day conference held in San Antonio, April 6, 1940. Nearly 100 attended and several traveled as far as 600 miles to be present.

Butane Excels as Fuel For Heavy Duty Engines

THE Otto cycle engine was originally engineered and designed for operation with a wet fuel and all of its history deals with its operation on gasoline. Its operation on butane, however, is an entirely different matter. Butane is a dry fuel and its history, as applied to Otto cycle engines, extends back over a period of less than the last ten years.

Today, in the State of California, alone, it is estimated that there are 15,000 engines operating on butane. These engines are powering trucks, buses, tractors, oil drilling rigs, road building machinery, drag-lines and similar equipment. At the present time, trucks are being converted for the use of butane at the rate of approximately 150 units per month in this state.

According to the report of the State Bureau of Mines a total of more than 63 million gallons of butane were consumed in the State of California for all purposes last year. Of this amount, it is reliably estimated that approximately 75% was consumed in engines and this figure represents some 47 million gallons. While all of this gallonage was not used to fuel trucks, and a portion of it was used to fuel engines powering the types of equipment previously mentioned, those 47 million gallons can be hypothetically translated into terms of mileage. By using the absolute minimum factor of but five miles to the gallon, they can be said to represent the equivalent of nearly a fourth of a billion truck miles. Remember this figure—a fourth of a billion truck miles; I shall refer to its economic significance later.

Permit me to cite an example that deals with somewhat smaller figures as a means of illustrating the growth of butane in popularity as a fuel for trucks.

The firm of Truck Fuels maintains

● **The relative merits of the butane-burning and the diesel engine is of increasing importance as heavy duty automotive operations increase the country over. In various kinds of agricultural work, oil well drilling, road building, mammoth construction jobs, and possibly most of all at present in the transportation field, the most economical and efficient fuel is the one upon which information is sought by the rapidly expanding LPG industry. A discussion of fuels, entitled "Butane vs. Diesel," was presented before the Los Angeles May meeting of the Society of Automotive Engineers, Southern California Chapter, and covered in part in the June, 1940, issue of BUTANE-PROPANE *News* (pages 30-33). The accompanying paper, entitled "Utilization of Butane in Heavy Duty Automotive Equipment," closed the argument in favor of butane at that meeting. It was presented by C. L. Parkhill, Parkhill-Wade, Los Angeles, and recites a wealth of information and operating data covering many applications of the butane-fueled engine. (Abstract by BUTANE-PROPANE *News*.)**

two service stations catering almost exclusively to trucks. One of these stations is located in Los Angeles; the other is in Fresno. Truck Fuels was organized in May of 1935 and it started from scratch in the sale of butane as a truck fuel. The recent average monthly butane gallonage pumped for use in trucks by these two stations is 80,000 gals. with the Los Angeles station averaging about 50,000 gals. per month and the Fresno station about 30,000 gals. per month. That means that the demand for butane as a truck fuel has resulted in the growth of this one firm from zero gallons to an annual volume of nearly 1,000,000 gals. —and this in the space of but five years.

Certainly such a development in so short a period of time clearly indicates the growth of butane as a fuel for heavy duty automotive equipment. What, then, are the specific advantages butane has to offer? They are:

1. Let us first consider mileage. Butane operation results in substantially the same mileage and, in some cases, even better mileage than that obtained from gasoline. Compared to diesel fuel, it will deliver less mileage but it compensates for the lower miles per gallon with other economic advantages.

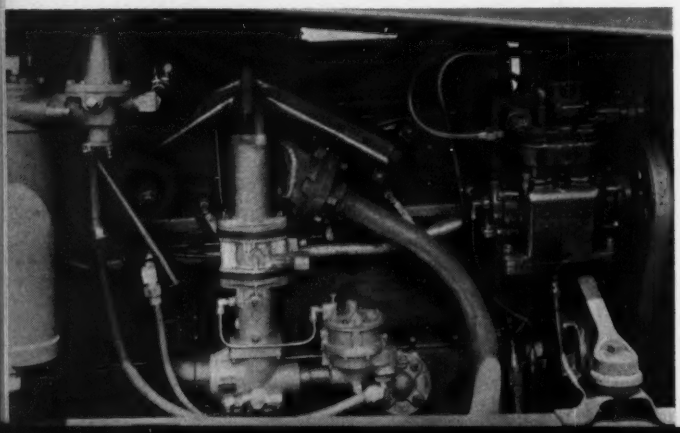
2. It will deliver the same horsepower with lower engine weight than the diesel engine. For example, the average 150 hp. diesel engine weighs 2300 lbs.; the average butane engine of the same hp. weighs 1675 lbs. The average 200 hp. diesel engine weighs 2900 lbs.; the average butane engine of similar power rating weighs 2400 lbs. In the first case, the butane engine has an advantage of 625 lbs. less weight for the same hp. developed; in the second case, it has an advantage of 500 lbs. less weight. That means increased revenue for the operator through increasing the payload by the extent of the weight advantage gained. In one case the increase in payload is approximately 1/3-ton; in the second, 1/4-ton.

3. Butane sells, locally, at 10 cents per gallon. Its price, therefore, is the same as diesel fuel. Compared, so far as gasoline is concerned, its price is 50% lower than the contract price of even second structure gasoline.

4. With butane there is a total absence of trailing exhaust smoke.

5. The use of butane eliminates obnoxious, nauseating exhaust odors.

6. Where the absolute limit in accordance with good operating practice between oil drains with both gasoline and diesel fuel is 1500 miles, under butane operation that limit is extended to 7500, 10,000, and even 15,000 and more miles. It is to be remembered that an oil drain for a gasoline-powered engine involves the purchase of at least six quarts while an oil drain for a diesel engine will involve the



A gasoline engine upon which butane conversion equipment has been made.

AGP GAS

IT HAS EXTRA SALES PUNCH!

The new AGP BUDGET gas-fired automatic storage water heater can build sales and profits for you!

YOU'LL find it profitable—and easy to sell the **AGP** GAS-FIRED Budget Storage Water Heater for four simple reasons: 1. It is specially designed for use with liquefied petroleum gases and is filled with quality features. 2. It is low in cost and inexpensive to operate. 3. It is a thoroughly tested product—assuring years of trouble-free, dependable service. 4. It is made and backed by the best known name in Heating and Plumbing—American Radiator & Standard Sanitary Corporation.

The **AGP** Budget is available with heavy galvanized tanks of 15, 20, 30 and 40 gallon capacities. Jacket is finished in smart white enamel with aluminum trim and thoroughly insulated. Standard Equipment includes snap action thermostat that provides for 100% shut-off to main burner and pilot in event of pilot failure. For full details and the name of our nearest sales office write—

AMERICAN HEATING EQUIPMENT COSTS NO MORE THAN OTHERS

AMERICAN RADIATOR & Standard Sanitary

New York CORPORATION Pittsburgh

Cast Iron & Steel Boilers & Furnaces • Radiators • Plumbing Fixtures & Fittings • Air Conditioners • Water Heaters • Heating Accessories

Copyright 1940, American Radiator & Standard Sanitary Corporation

Visit our building at the New York World's Fair. Ask for Mr. Frank Stubbs, our Exhibit Manager.

purchase of as much as five gallons of fresh lubricating oil.

7. The capital investment in an Otto cycle engine adapted for butane operation is far less than the capital investment in a diesel engine of similar horsepower. For example, the average price of a 150 hp. diesel engine is $2300; the average price of a 150 hp. Otto cycle engine, adapted for butane, is $1150. The average price of a 200 hp. diesel engine is $3200, while the average price for a 200 hp. Otto cycle engine converted for butane is $1645. In engine price, the 150 hp. butane engine offers the operator a capital investment saving of $1175, or 100% less than the similar diesel. In the case of the 200 hp. engine, it offers the operator a capital investment saving of $1555, or more than 100%.

8. Because of its lower initial cost and also its ability to transport a greater payload than the diesel of similar hp., the butane engine will amortize its cost more rapidly than will the diesel engine.

9. Engine maintenance costs are greatly reduced. Butane burns clean; it leaves little or no carbon deposit. Valve grinds, therefore, become the exception rather than the rule; piston ring life is increased 25% and cylinder wall wear is greatly reduced.

Misunderstanding Causes Bearing Trouble

So now we come to the subject of bearings. I will admit that there have been quite a few bearing failures in certain butane operations. At the same time, I want to point out that those bearing failures can well be charged, not to the fuel, but to misunderstanding on the part of those making such butane conversions.

The conversion of an Otto cycle engine involves something more than planing down the cylinder head to increase the compression ratio. It involves something more than adding the necessary butane carburetor, pressure regulators and adding the required fuel tubing. The element—the presence of which or the lack of which will determine the success or failure of a butane conversion—is an intimate and complete knowledge of all the various types, makes and models of Otto cycle engines which have been placed on the market powering trucks, buses, tractors, road machinery, etc., during the last ten years. Where conversions have been made or at least supervised by firms possessing such knowledge, not one single failure has resulted. Instead, each and every such conversion has been an outstanding economic and operating success!

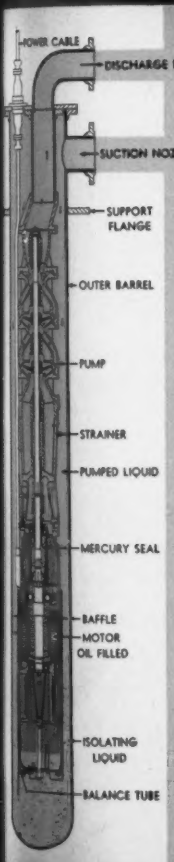
Increasing Compression Ratio

In many conversions, it is necessary to increase the compression ratio of the engine. The subject of bearing pressure increase when the compression ratio is increased is highly controversial. To correct the prevailing misunderstanding and, in an attempt to overcome some of the difficulties that have been experienced, permit me to outline very briefly, the facts in connection herewith. For the purpose of strengthening my statements, I quote four paragraphs from the "High Compression Manual" of the LaDue Institute as follows:

"The limit of an engine's efficiency is the efficiency of the fuel on which it is operated. Engine designers, faced with the problem of producing engines to meet the conditions imposed by a wide variety of fuels, have been forced to adopt compression ratios which they considered safe and efficient for average conditions. Where it is possible to design for a specific fuel of known high anti-detonating quality, better results can be obtained with a much lower fuel operating cost.

"Fuels vary greatly in their abilities to

Here's that **STUFFINGBOXLESS PUMP** for handling Butane, Propane and other Volatile Liquids



DESIGNED FOR EASY APPLICATION TO ALL SERVICES requiring the pumping of highly volatile liquids such as gasoline, butane, propane, and similar liquids at temperatures not exceeding 150° F., the STUFFINGBOXLESS Pump has an almost unlimited range of head and capacity from 15 gpm upward. High suction and discharge pressures offer no problem, as the unit is completely sealed in a heavy steel barrel with the pumped liquid isolated from the atmosphere.

IMPORTANT STUFFINGBOXLESS ADVANTAGES

NO STUFFING BOX — NO PACKING — Costly losses of pumped liquid by stuffing box leakage as well as the hazards of fire and explosion are eliminated. Complicated auxiliary devices are not required for stuffing box cooling and oil sealing — as frequently needed on conventional pumps . . . there are no stuffing boxes. *MINIMUM INSTALLATION SPACE* is required as the unit is installed in a vertical position below the ground level, with only the suction and discharge assembly above ground. *POSITIVE LIQUID LEVEL NOT REQUIRED* on the pump suction nozzle, as the unit may be installed below ground level at the proper depth for required submergence. This permits the setting of processing or storage units and other similar equipment closer to ground level. *NO EXPOSED ROTATING PARTS* — therefore, no shelter of any description required. Lubrication is automatic within pump and motor. *COMPLETE HYDROSTATIC BALANCE* — of the liquid-filled unit permits its use on any suction or discharge pressure. *HIGH OVERALL EFFICIENCIES* — through efficient hydraulic and electrical designs, elimination of stuffing box friction and leakage. *NO PULSATION OF PUMPED LIQUID* — Smooth continuous flow from centrifugal pump.

BYRON JACKSON CO., LOS ANGELES, New York, Houston

BYRON JACKSON CO.,
Dept. OS-11
Box 2017 Terminal Annex
Los Angeles, California

Please send brochure describing and illustrating the STUFFINGBOXLESS PUMP for handling..... g.p.m. of..... at.....lbs. suction pressure; .....lbs. discharge pressure; temperature .....degrees F.; .....Specific Gravity.

Name.....

Position.....

Company.....

Street.....

City..... State.....

subdue detonation and consequently permit the use of compression ratios of greater or lesser efficiency. The economical compression ratio for any particular fuel is the highest at which it can withstand detonation. With less compression, the fuel is not doing all the work of which it is capable—with more compression, part of the energy of the fuel goes to useless overheating and battering of the engine.

"To the uninitiated, it might appear that an increase in compression ratio causes an increase in bearing loads. Actually, however, the average bearing load can ordinarilly be materially diminished by an increase in compression ratio. This seeming paradox is due to the fact that inertia forces in the engine are almost invariably larger than those due to gas pressure. In other words, if the engine were rotated without compression or firing, the bearing pressures would be larger than during actual operation at full throttle.

"A study of the inertia forces and gas pressures for an 8-cylinder automobile engine, now in production, at compression ratios of 5.5 and 7.1 to 1 revealed the fact that at an engine speed of 2550 r.p.m. the inertia forces become greater than the combined inertia and gas pressure under wide open throttle at 7.0 to 1 compression ratio. At higher speeds the beneficial effect of the increased compression pressure becomes more apparent. At the lower speeds the average bearing pressure is greater for the combined gas and inertia pressure when the engine is operated at full throttle but, except during acceleration and hill-climbing, the throttle is only partially opened at the lower engine speeds; hence, the actual bearing pressure will usually be lower."

For emphasis, I repeat an excerpt from the last sentence of the statement: "At the lower speeds the average bearing pressure is greater for the combined gas and inertia pressure when the engine is operated at full throttle." As this really is the crux of the whole matter of losing bearings after compression ratio has been raised and the engine converted to butane, we will deal with the subject from that point. Expressed in simple language, the two causes of bearing failure in butane-converted engines is lugging and wind-up. Lugging is increased B M E P, or Brake Mean Effective Pressure; the latter, high inertia forces. One of Webster's definitions of inertia is, "Motion in the same straight line of direction unless acted upon by an external force."

When an engine is converted to butane, the fuel previously used—gasoline—having an octane number of not exceeding 80 is replaced by a fuel with an octane number of approximately 108. With the latter fuel, the operator may lug the engine down much lower without detonation than was previously possible and by so doing, the B M E P is increased to a point which may cause bearing failure. With higher compression ratio

A tractor converted to use butane which is being refueled in the field.

FLORENCE BUILDS GOOD WILL FOR YOU IN THE BIG LPG MARKET!

THE range you sell in the LPG market is mighty important to you! Because a satisfied customer means a continued LPG user.

In Butane-Propane Ranges, Florence gives you a long list of features that *make satisfied customers*—features that give them the most convenient, most dependable, pleasantest cooking they've ever known! Remember — Florence has been building fine ranges for more than 65 years.

Florence stands behind you with strong national advertising, full dealer sales helps and a liberal Promotion Plan that shares your advertising expense. Mail coupon today to the Florence Office nearest you!

FLORENCE STOVE COMPANY

General Offices and Plant, Gardner, Mass.; *Western Offices and Plant,* Kankakee, Ill.; *Sales Offices:* 1458 Merchandise Mart, Chicago; 45 E. 17th Street, New York; 53 Alabama Street, S.W., Atlanta; 301 N. Market Street, Dallas; and 2730 16th Street, San Francisco.

FLORENCE *Gas Ranges*

FOR LIQUEFIED PETROLEUM GAS

FLORENCE STOVE COMPANY

Please send me the Florence Gas Range Catalog, prices, and full information about the liberal Florence Promotion Plan for Dealers.

*Name*_____

*Address*_____

LET RELIABLE SPACE HEATING

BUILD YOUR LOA

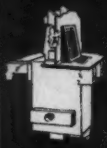
100% GAS SHUTOFF

FLOOR FURNACE
Fully vented—requires no basement—scores of exclusive features.

MODERN CONSOLE
Economical, circulated, vented warmth . . . for the most modest budget.

ZONEAIR UNIT
Heats winter air, circulates summer air, by *zones*: one room, a wing or a whole house.

FORCED AIR UNIT
Slenderized, compact. Fits in closet or nook. Spring-conditioning for small homes.



DUPLEX FURNACE
Sends even heat from both sides of wall. Requires no basement.

GRAVITY FURNACE
Economical, reliable, efficient heating for any size house.

PAYNE L.P.G. FURNACES

ARE

✓ INDIVIDUALLY TESTED
✓ CUSTOM-ADJUSTED
✓ TIME-PROVEN

Space heating—your biggest load builder—is also your toughest L.P.G. problem. *But it needn't be. PAYNE*—who pioneered L.P.G. equipment in 1928 (first installation still going strong!)—offers the dealer these exclusive roads to economical, reliable, Butane-Propane heating:

✓ INDIVIDUALLY TESTED: Every single Butane-Propane-fired *PAYNE* unit is individually tested at the factory in the *PAYNE* Testing Laboratory—one of the Nation's outstanding proving grounds. *Economical and efficient operation is certified.*

✓ CUSTOM-ADJUSTED: Every *PAYNE* L.P.G. Furnace is adjusted by actual test in accordance with the b.t.u. heating value and specific gravity of the mixture it is to burn.

✓ TIME-PROVEN: Hundreds of installations in over twelve years attest *PAYNE'S* knowledge of Liquefied Petroleum Gas fuel. There is no "guesswork" about *PAYNEHEAT* satisfaction.

A few PAYNEHEAT dealerships are open in L.P.G. territories. Write Mr. J. H. Keber, Sales Manager, Payne Furnace & Supply Co., Inc., Beverly Hills, Calif.

PAYNEHEAT

Payne FURNACE & SUPPLY CO., INC.

BEVERLY HILLS • CALIFORNIA

and dry gas fuel, increased engine r.p.m. is possible; inertia forces may thereby be materially increased beyond the safe limit. This, therefore, becomes an operating problem and not a mechanical condition. The remedy as in the case of the diesel is the installation of a tachometer to guide the operator so he may keep the engine within the recommended, safe limits of engine revolutions.

To make this point concerning bearings, it was necessary to digress. Just prior, I made certain statements concerning the advantages of butane. Let us now return to them and determine if those claims can be substantiated in the light of actual operating experiences.

Thirty Trucks Converted

One of the important butane conversion jobs was that made for the Griffith Co. in connection with the construction of the Cajalco dam and reservoir. Thirty trucks with 10-yd. capacity dump bodies were purchased. The project involved moving 7,523,000 cu. yds. of earth. With butane as fuel, it was found entirely feasible and practical to load each truck with 13½ cu. yds. instead of the rated 10 cu. yds. In the movement of an additional 3½ cu. yds. of earth per trip, a tremendous saving was secured and the job, itself, was materially speeded-up. In one year, a total of 4,313,000 cu. yds. of earth were moved at a fuel consumption of 500,000 gals. A direct saving of 6 cents per gallon resulted as compared to the cost of gasoline. This saving not only liquidated the cost of the conversion but it actually resulted in the return of a 100% dividend to the contractor!

The first streamline engine ever built was Union Pacific's M-10,000, now known as the "City of Salina." It was and now is powered with a Winton V-type, 12-cylinder, 600 hp. engine. This plant originally operated on distillate and in March of 1939, it was converted for operation with butane. While it is still too early to confirm all the advantages gained from the conversion, several highly important gains have already been recorded. These are:

1. A comparison of fuel consumption for one month's operation as compared with the fuel consumption in the same month of the previous year shows a 13% saving in fuel costs.

2. Only 200 gals. of lube oil were consumed in one month's operation as compared with 1100 gals. in the same month of the previous year. Let me point out, however, that all of this saving cannot be charged to butane as the engine was completely overhauled in the conversion process and that accounts for some of the saving. In the light of other experiences, however, a considerable total of the oil saving recorded may be credited to butane.

3. The increased lubrication efficiency obtained as a result of the use of butane has lowered engine maintenance costs. This is the direct result of the fact that butane completely vaporizes; consequently there is no dilution of oil in the crankcase.

4. The inherent pressure of the fuel in the tanks eliminated the necessity for fuel pumps which formerly were a considerable item of maintenance expense.

5. Smoother engine operation resulted. The fuel formerly used carbureted poorly and it detonated. It was therefore necessary to "jockey" the throttle to "full open" and it had to be kept there for some time after leaving the station in order to obtain the desired speed. With butane, the throttle is opened "full" immediately at the start. Acceleration is almost instan-

taneous and the throttle can be cut back to one-half or one-quarter open almost immediately, depending upon the cruising speed desired.

6. Because combustion is complete, foul exhaust odors have been eliminated and the comfort of passengers increased.

Many Buses Use Butane

In the bus transportation field, the Lang Transportation Co. of Long Beach, Calif., and the El Paso, Texas, bus lines have recently turned to butane. No operating data is yet available as the installations are too new. However, a certain bus transportation system which was the first to convert its entire fleet for butane, reports some interesting data. This company converted 10 of the buses in the fall of 1934 as an experiment. The results of the experiment were so successful that it converted all of its fleet, consisting of 135 buses, and these are now operating on butane. The following advantages are reported:

1. Foul, obnoxious, nauseating exhaust odors were completely eliminated to the great comfort and decided appreciation of passengers. Bus transportation engineers had worked unsuccessfully upon this for years.

2. Cylinder wall wear decreased .008 in. per 100,000 miles. This is the direct result of superior lubrication obtained from the use of butane.

3. Mileage obtained from piston rings increased approximately 25% per set.

4. Motor oil consumption was reduced 32%.

5. Spark plug replacements were reduced 40%.

6. General engine maintenance costs were reduced by approximately 20%.

A novel conversion job is that of the General Pre-Cooling Corp. This company operates portable equipment for pre-cooling refrigerated freight cars. The company operates 20 pieces of such equipment, of which total, five are diesel rigs. As compared to gasoline, the company reports that butane fuel costs on its converted Hercules J-X-D 65 hp. engines are about 50% less. Oil consumption is approximately 40% less. Maintenance costs are about 30% less in spite of the fact that the engines are operated under wide open throttle. Valve grinds and overhauls have been greatly reduced and each engine is operated on the equivalent of 11,000 miles before the crankcase is drained and the oil changed.

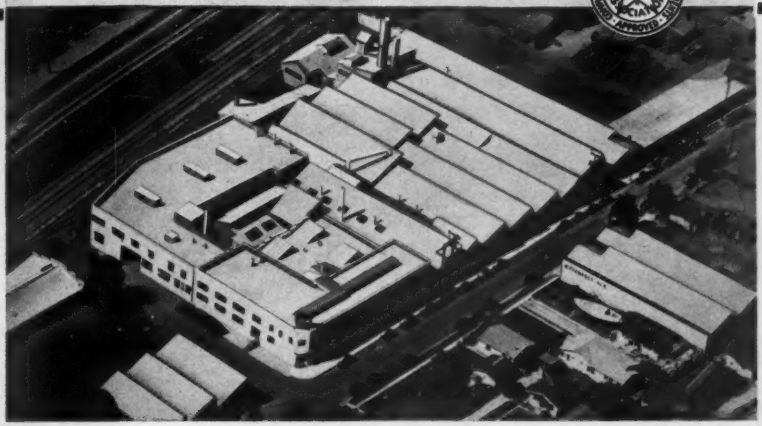
In comparison with the diesel rigs, the company cites the fact that with butane, overhauls are fewer and less costly both as to labor and parts; the initial investment in the engine favors butane by 1 to 2½; operator overhead is materially reduced, as with butane a regularly qualified mechanic is required instead of an engineer; there is no oil dilution nor is any soot present to retard efficiency.

Huge Butane Fleet

The Union Paving Co. of San Francisco, uses the following types of equipment, all powered with butane: light delivery trucks, small and large dump trucks, air compressors, tractors, asphalt and concrete finishing machines, concrete mixers, graders, water pumps, road rollers, power shovels and electric welding outfits. Power units of such equipment include, among others, such a wide variety as Twin City, Climax, Wisconsin, Waukesha, Hercules, LeRoi and

Pacific

PGR



Thermolators

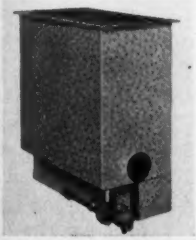
YOU CAN'T MISS A SALE WITH THE "PACIFIC" LINE!

LIQUEFIED petroleum fuel appliances by "Pacific" have "last word" engineering, modern streamline beauty, amazing fuel economy, highest possible efficiency rating, adequate range of capacities, and dollar value. Sales are zooming from coast to coast.

You should "close" every shopper if you have the "Pacific" line . . . and quickly build bottle gas and tankage load by switching owners of outmoded heaters to the solid-comfort money-saving "Pacific" L.P.G. appliances.

Write for new free Catalogue . . . TODAY. Address Dept. BN-7.

Water Heaters



Floor Furnaces

PACIFIC GAS RADIATOR CO.

Main Office and Factory, Huntington Park, Calif.

Hall-Scott engines. The company has been using butane in these engines for five years and they state that they have secured a considerable saving in fuel cost while "the cost of maintenance is considerably lower, due mainly, we believe, to the almost entire lack of carbon deposit within the combustion chambers." They further state that it is their experience that the larger type motors show that more power is generated on both high and low compression heads.

A certain truck operator reports his experiences with a fleet of 22 units, 21 of which are White trucks varying in motor size from 250 cu. in. to 363 cu. in. The remaining truck is a 2-ton Dodge. These units operate under severe, adverse conditions, hauling grain, heavy farm machinery and cattle through and over soft, sandy fields. At the present time this company averages between 75,000 and 100,000 miles on bearings and 85,000 miles on valve grinds. The engines are operating up to 15,000 miles before the oil is drained from the crankcase. Because of dust conditions, good air cleaners are used.

Operating Figures

Selecting three trucks at random, they quote the following operating figures: 1. A White truck, 318 cu. in. engine purchased new in 1936. It received its first valve grind and a new set of standard rings at 86,000 miles. It received another valve grind at 130,000 miles. The engine was rebored at 180,000 miles and since that time it has rolled up 250,000 miles with nothing more than a valve grind.

Truck No. 2 is another White, 363 cu. in. engine and purchased new in 1938. It received its first valve grind at 76,000 miles, a new set of standard rings at 95,000 miles, a complete overhaul at 110,000 miles and since it has traveled 140,000 miles. It still is in perfect mechanical condition.

Truck No. 3 is still another White, 270 cu. in. engine which received its first valve grind and set of standard rings at 90,000 miles. Its total mileage to date is 108,000 miles. Nothing more has been done.

Oil Costs Cut in Half

The Warren Transportation Co. of Hayward, Calif., reports operating 14 trucks on butane for the past four years. These trucks are equipped with Hall-Scott and Continental motors, hauling gross loads of from 60,000 lbs. to 68,000 lbs. In a recent letter, one of the company executives states that a saving of 50% in oil cost has been secured due to lack of dilution and, at the same time, cylinder wall and valve wear have been greatly reduced.

In an earlier part of this paper, I cited a hypothetical figure of nearly one-fourth of a billion miles as the equivalent of the truck road mileage which could be obtained from the butane gallonage consumed last year in engines in California. Translate those advantages, each of which has been definitely established by citation from operators' actual experiences, into cold dollars and cents savings and you have the picture of the reason for the tremendous growth in utilization of butane for heavy automotive equipment.

Commercial
AS WELL AS HOME USERS ACCLAIM
HYDRO-GAS System

On August 27, 1936, an 1109-gal. Hydro-Gas Systems was installed.

At the time of the installation I had eight cottages, four of which were equipped with gas ranges and circulating gas heaters and two automatic gas water heaters. All of this equipment is still in use with many additions. I now have 29 radiant and circulating heaters, eight gas ranges and four automatic hot water heaters, the largest being 112 gals. capacity, as well as three Electrolux refrigerators. In addition to this we supply gas to a restaurant located several hundred feet from our property.

Florida has had some unusually unusual weather this Winter, it being so severe it has broken a 54-year record, but we are very thankful to state we did not experience any difficulty.

Above is a reproduction from May, 1940, Butane-Propane News article by C. L. J. Smith, Managing Owner, Pensacola Motor Lodges.

R. B. Teeple Funeral Home
AMBULANCE SERVICE
PHONE 98
RICHLAND, MISSOURI

Our building is 36' x 56' and the heater is suspended from the ceiling of the basement with a fan forcing the air through the hot air tubes into one main duct trunk line. By this system we can keep our home within less than a two degree variation in heat, thermostatically controlled.

We have been using the Hydro-Gas System for almost two winters and find it to be the most efficient system of heating we have ever operated.

We also operate a gas range and an automatic hot water heater from the same system. This gives us the convenience of city gas, although we are ninety miles from a natural gas main. This enables us to have a modern and up-to-date heating system in our funeral home which is very essential in a business of this kind, as we don't have to stop to pour in oil or carry out ashes when we have a funeral in our chapel.

Now about the cost which we observe very closely. We find that our Hydro-Gas System can be operated at about the same cost as a good grade of coal or oil and the installation expense cost us about half what a good oil or coal furnace with a stoker would cost.

I could go ahead and tell you of a hundred reasons why we like Hydro-Gas heating. It is automatic, and the cleanest, healthiest, and most sanitary heat we have ever used. We would not go back to the old method of heat even if the cost of Hydro-Gas were twice as much as it is.

R. B. Teeple

Conducted by the --- Franciscan Brothers

Post Office Box 137
SEARCY, ARKANSAS

Morris School ★ for BOYS

For the past four years I have been cooking and baking here at Morris School for Boys, located nine miles west of Searcy, and just that far from a gas main, for a student and faculty body of over a hundred hungry boys and men. And, the only fuel I had was wood, and sometimes green wood. Cooking with wood might SOUND thrilling, but in fact and practice it's a real bother—what with the difficulty of obtaining a sufficient supply of dry wood, and the ever constant attention that must be given to the supply of fuel in the fire-box, not to mention the dirt and mess that comes with the burning of wood. Let the fire go out with a batch of thirty or sixty loaves of bread in the oven, and you have tragedy no less.

Now that we have our Hydro-Gas System, I have clean, steady, dependable, efficient heat when I want it at the light of a match, and no ashes, soot, or dirt.

Economical—say, Hydro-Gas spells economy. Believe it or not, but it's a fact that we baked and cooked and heated water for a hundred people over a period of five weeks for the small cost of $28.75, less than 85c a day.

Our only regret is that we did not get in on the benefits of Hydro-Gas years sooner.

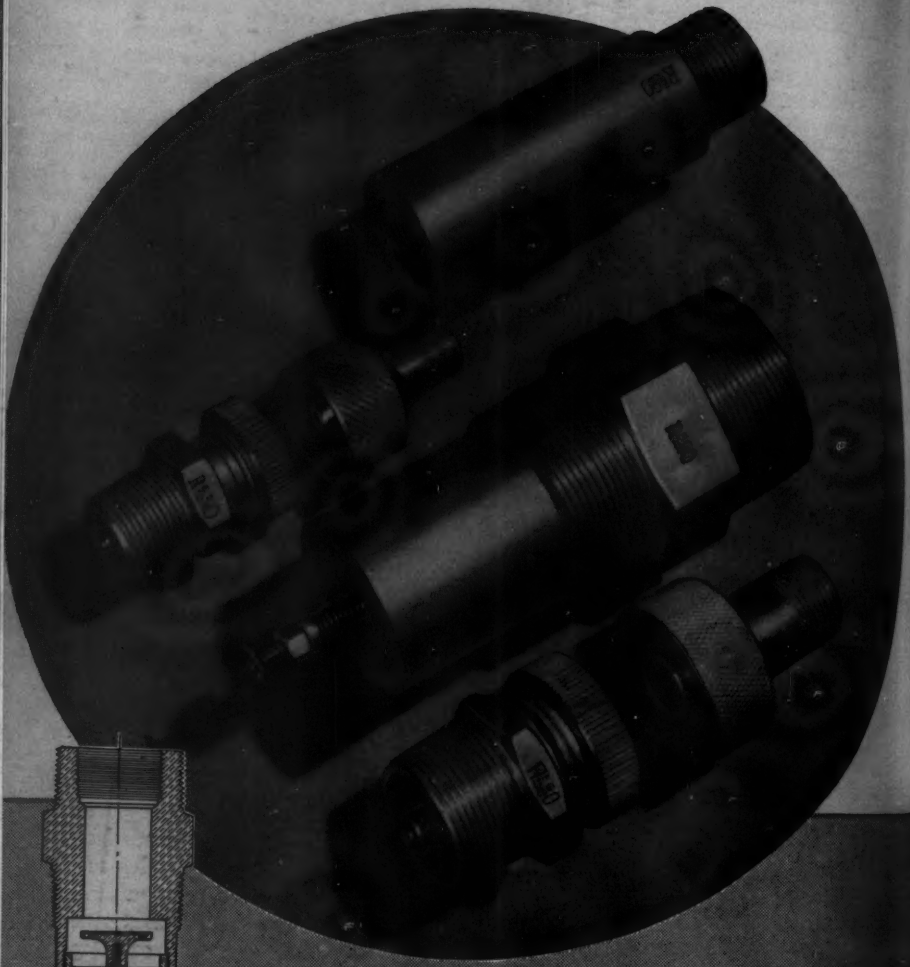
John Meier
Bro. John Meier, C. F. P.

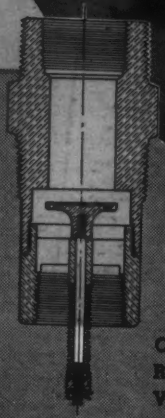
HYDRO GAS SYSTEMS

The patented Vaporizer and Re-Vaporizer have made Hydro-Gas Systems the accepted choice of thousands. Each system is built in accordance with rigid specifications of A.S.M.E. — is inspected by Hartford Steam Boiler and Inspection Co., and carries the Underwriters' Laboratories acceptance. Correspondence is welcomed from responsible prospective distributors and dealers

SOUTHERN STEEL COMPANY, SAN ANTONIO, TEXAS

PROTECT YOUR BUTANE-





Cross section of a typical RegO EXCESS-FLOW CHECK Valve.

ROPANE INSTALLATIONS

INSTALL REGO EXCESS-FLOW CHECK VALVES
BACK-PRESSURE CHECK VALVES
QUICK-FILLER VALVES
VAPOR-RETURN VALVES

Accidental breakage of liquefied petroleum gas piping or transfer hose *and these accidents do and will occur* — result in a serious hazard to life and property unless adequate provisions are made to protect the installation against the resulting discharge of the container contents to the atmosphere.

RegO Excess Flow Check Valves, Back Pressure Check Valves, Quick Filler Valves and Vapor Return Valves — when properly selected and applied — effectively protect your installation against these hazardous conditions.

REGO EXCESS-FLOW CHECK VALVES allow for normal flow but close automatically when the flow through the valve exceeds a predetermined amount. (As might occur due to a hose or piping failure.)

REGO BACK-PRESSURE VALVES permit the flow of gas in one direction but automatically close when the flow is reversed or stopped.

REGO QUICK-FILLER VALVES afford a convenient and safe means for connecting the transfer hose. They allow for unrestricted flow into the tank but automatically close when the flow is stopped or reversed.

REGO VAPOR-RETURN VALVES offer a convenient and safe hose connection. The valve is held open by the hose coupling and closes automatically when the coupling is disconnected.

SPECIFY REGO FOR COMPLETE PROTECTION

The BASTIAN-BLESSING Co.
258 E. Ontario Street Chicago, Illinois
Pioneers in equipment for using and controlling high-pressure gases.

January Freeze Warmed Up Industry

By M. E. McKAY

Southern Steel Co., San Antonio, Texas

ESSENTIAL in the application of liquefied petroleum gas as a fuel for the home is a never-failing source of fuel supply. Put to the test last winter it was reflected that existing facilities for laying down gas at the dealers' bulk storage were weak somewhere along the line. Facilities, apparently strained to the maximum capacity, failed in many instances to provide retail gas dispensing agencies with gas when it was most needed.

Greater fuel storage capacity in the field will help to prevent reoccurrence of this condition. Watchfulness and energy on the part of the retail dealer to the end that going into winter months customers' system containers will be full and thus ready for the maximum load which is to be encountered, is important.

The January Situation

Many dealers last January, during the extremely cold weather which resulted in extraordinary heavy use of gas, sent frantic calls to the supplier for gas. Suppliers were deluged with emergency calls. Tank car facilities and the speediest methods of delivery proved inadequate for the emergency. Dealers rationed out their gas on hand in approximate quantities of 10 to 25 gals. to the customer.

The result, in some instances, was inadequate pressure in customers' systems to supply a sorely needed gas for heat, because of the simultaneous occurrence of heavy withdrawals and low outside temperatures which slowed the vaporizing process. Small bulk fuel volume in containers also slowed up vaporizing and contributed to inadequate pressure maintenance. The lesson learned was a costly one and must not be forgotten if the dealer would avoid having his whole operation eventually discredited in the public estimation.

There is a need of the manufacturer of complete dispensing equipment operating on a careful and studied plan of distribution. The plan should include these provisions, listed in the order of their importance: (1) Avoidance of direct competition with sales outlets; (2) dealers' costs established and selling price set, or at least suggested, to include required profit for the dealers; (3) furnish sales helps, conduct sustained advertising programs, and employ sales promotion tactics; (4) provide adequate line of products to meet the complete needs of the seller and purchaser; (5) perfect the product to a point where service troubles will not harass the dealer, and (6) cooperate with the dealer.

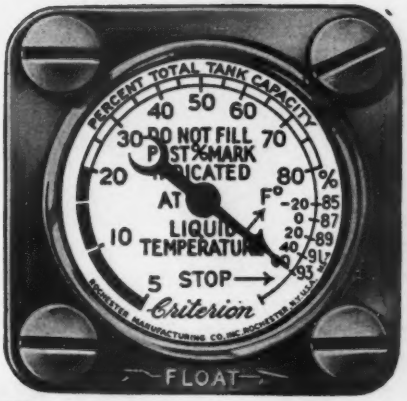
The number one bugaboo in the operations of liquefied petroleum gas systems is improper installation. Carelessness which results in neglect, and ignorance which contributes to improper protection against accidents

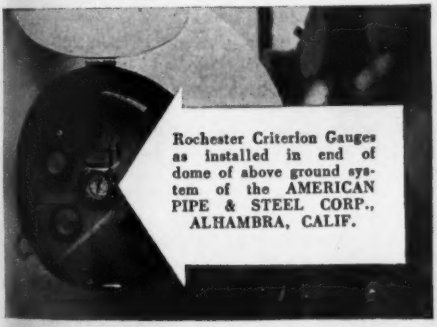
HERE'S THE GAUGE THAT BRINGS A NEW MEASURE OF EFFICIENCY TO L.P.G. SYSTEMS!

Rochester Criterion Gauges are SPECIFICALLY designed for use in liquefied petroleum fuels and incorporate the famous Rochester magnetic principle of operation which assures greater accuracy and positive leak-proof construction. Listed as Standard by Underwriters' Laboratories. Distributed by manufacturers of L.P.G. Systems.

MANUFACTURERS!
SPECIFY Criterion Gauges
On Your LP.G. Systems

ROCHESTER MFG. CO., INC.
17 Rockwood St., Rochester, N. Y.





Rochester Criterion Gauges as installed in end of dome of above ground system of the AMERICAN PIPE & STEEL CORP., ALHAMBRA, CALIF.

- Permanent magnet pointer control—no packing glands.
- No opening through Gauge head into tank.
- No fuel waste when in use.
- No keys or wrench required when reading.
- Easy-to-read dial tells ACCURATELY at-a-glance the amount of fuel in the tank in terms of percentage of total capacity.
- Red area on left side of scale warns user when fuel needs replenishing.

ROCHESTER *Criterion* GAUGES

and service interruptions, must be overcome by vigilance and effort on the part of the equipment supplier. It is his job.

With the anticipated certain increase in the general acceptance of domestic liquefied petroleum gas service considerable growth in the lists of those offering equipment to the dealer is to be expected. Sales of containers over the counter for home installation followed by inexpert installation and servicing by the uninformed is the greatest menace to future sales and profit. The first requirement supplementary to manufacture and installation is a printed installation and operation instruction manual, complete and comprehensive, attached to each and every gas service system. Admonitions with reference to the need of application of the instructions should meet the eye throughout the process of equipment handling and system operation.

Price-Cutter Will Ultimately Lose

Succumbing to the pressure of competition, resulting in installation on the part of the dealer, of system containers of inadequate capacity, is to be avoided. Losing a deal to the competitor, who, to provide an imaginary economy, installs equipment not designed to properly meet current and future requirements, is no penalty to a legitimate operation. The dealer ought to be completely informed as to the exact need in equipment for the prospect. If he makes an accurate and honest statement to his prospect relative to the prospect's needs he has most to gain. Making an installation of a system container which he knows to be of inadequate capacity, made in order to beat the competitor to the deal, will penalize dealer operations. Rather than depart from what is best, let the price-selling competitor have the deal. The loss to the dealer who has made an accurate estimate of the prospect's need is only temporary. The prospect will invariably replace his inadequate equipment, and to do it will turn to the dealer whose estimates and proposals have been proved correct.

The dealer who neglects to respond promptly to reports of leaks and installation irregularities, and who fails to act upon recommendations and admonitions for safety supplied by those whom he knows to be informed and genuinely concerned, stands to suffer one of life's supreme regrets and greatest financial penalties. Every major accident in the industry with which the writer is familiar resulted from neglect or omission or both.

◆ ◆

S. C. Curtis Is First Philgas Employe To Retire

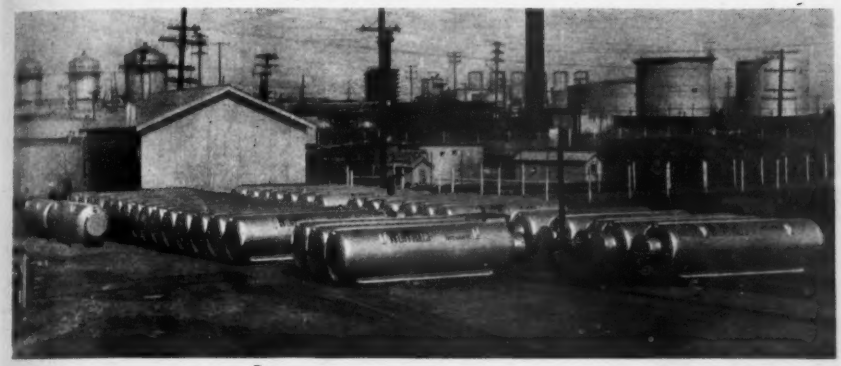
To S. C. Curtis, assistant to superintendent, at South Sudbury, Mass., district goes the distinction of being the first Philgas employe to benefit from the Phillips Petroleum Co. retirement plan. To celebrate this occasion the personnel at South Sudbury arranged a dinner in his honor.

Mr. Curtis joined Philgas in January, 1929, when the Sudbury plant was just being built. In fact, he was one of the first three men employed by G. R. Fisher, first district manager at Sudbury, and now with Philgas at Waterloo, Iowa. Today there are more than 25 employes at Sudbury and the district has grown into one of the larger Philgas distributing points, serving thousands of retail users along with a group of industrial and wholesale customers.

Hanson Butane Tanks

DOMESTIC, STORAGE, SKID, TRACTOR, MOBILE, TRANSPORT

C. I. A. C. A. P. I.-A. S. M. E. A. S. M. E. CODES



36 of the 100 Hanson Butane Transportation Tanks on the refinery loading dock of a major oil company in California ready for export shipment to South America.

15 YEARS' EXPERIENCE in the design and fabrication of high grade pressure vessels have made it possible for us to develop a standard in the manufacture of Code tanks that take the severe punishment of export trade with absolute safety and economy. All Hanson Tanks are built to this high standard, and their users are assured of the best in service. We have long established the practice of shipping standard butane tanks the day of order, and our prices are strictly competitive.

HANSON REDHEAD BUTANE CARBURETORS

The Correct Answer to All Butane Conversions

During the past four years these carburetors have been giving complete satisfaction in both economy and performance. This is evidenced by many successful conversions of truck fleets, municipal bus lines, road building equipment, farming implements, pumping units, power plants, stationary engines and automobiles.

EXCLUSIVE TERRITORY AVAILABLE. WRITE FOR DETAILS.

ROY E. HANSON

MANUFACTURING MECHANICAL ENGINEER

1924 COMPTON AVE. LOS ANGELES, CALIF.

Consumer Chooses

Has Option of Metering or Gallonage Measurement

By O. D. HALL

FOLLOWING an established policy that the better a customer is satisfied with service, the greater the benefit to the distributor, J. L. Grigsby, president and general manager of the American Butane Gas Co., Oklahoma City, Okla., has established an optional plan which permits the consumer to choose between a metering of the gas used and a gallonage measurement of gas.

J. L. GRIGSBY

When the latter is chosen there is installed on top of the tank a valve and a Rochester Criterion float gage, specially designed for the company by the manufacturer, to register consumption. This allows the consumer to determine his usage without turning on any valves or wasting any gas.

Above-ground propane systems, ranging in capacity from five to 218 gals., are furnished and installed on a lease basis which has worked out very satisfactorily.

Motorized equipment owned by the company includes a 1½-ton installation truck equipped with a chain hoist to load and unload gas systems. It has a floating beam which can be pulled out approximately eight feet and is supported with a portable stand for unloading. With this equipment one man can pick up the customer's tank, fill it at the bulk station, deliver and install it at the customer's premises in one operation. Under the old system it was necessary for a gas delivery truck to follow the installation equipment, requiring the services of two men and two cars, with double mileage and time outlays.

Among other motor equipment are one 1000-gal. butane delivery truck and one 1000-gal. propane delivery truck. Mr. Grigsby states that all his delivery and installation men are bonded and licensed under the Oklahoma LPG law and safety rules of the State corporation commission, which became effective May 1.

The American Butane Gas Co. has recently moved into new quarters at 1509 Exchange Ave., Oklahoma City. The former location was at 1210 N. Western Ave. The new building,

Bottle delivery truck and loading dock, showing employe filling a propane bottle for American Butane Gas Co., Oklahoma City.

PREPAREDNESS

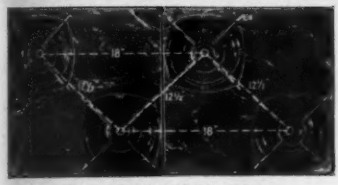
FOR MORE RANGE SALES

ROPER

RANGES FOR ALL GASES

WITH THEIR MANY ADVANCED FEATURES HELP YOU CAPTURE SALES AND PROFITS

"CASH IN" ON EXCLUSIVE FEATURES LIKE THESE



THE STAGGERED TOP
Plenty of room for 4 large utensils. No crowding. No hot handles. Popular with housewives everywhere!

New, smart, practical! Provides an ideal means for broiling . . . then for serving piping hot from the grill and chrome serve tray.

None too soon to get ready for a smashing sales campaign on ranges. And no sales weapons so powerful as the exclusive features, the sales helps, the promotional prices, now offered by Roper. Here's business preparedness it will be well to start today.

Write for Roper Catalog and promotional book.

GEO. D. ROPER CORPORATION
General Sales Office and Plant: Rockford, Illinois

FAVORED BY BOTTLED GAS DEALERS THROUGHOUT THE NATION

grounds and equipment represent an outlay of approximately $30,000 and makes of it a highly modern sales, storage and distributing plant for liquefied petroleum gas. Included is a brick and concrete one-story office and shops building, 40x80 ft. in size. The grounds are enclosed by a 6-ft. chain-link fence, surmounted by three strands of barbed wire.

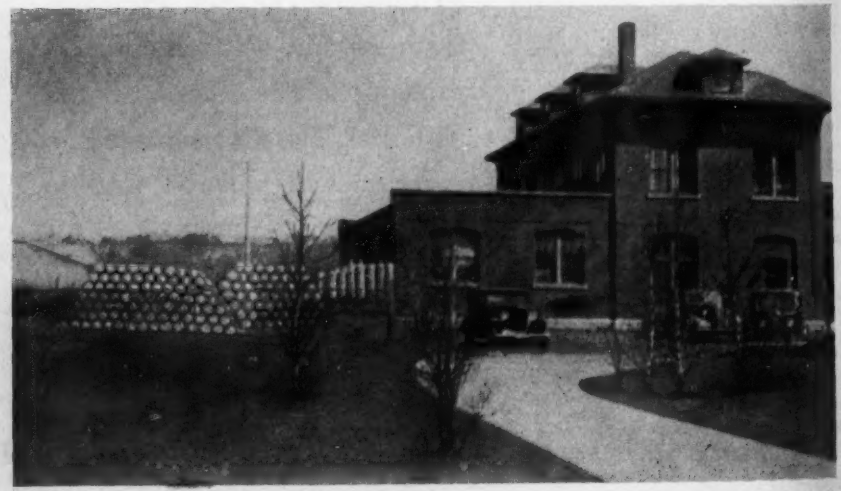
The storage plant at the back of the grounds includes two mounted tanks for storage of butane and propane gas, each of 1000 gals. capacity. One contains propane for bottle filling and the other butane for motor fuel and other purposes. At this location, a pump and electric motor, capacity 3 to 5 gals. per minute, force LP gas through the pipe line to the bottle filling plant mounted on an elevated platform, midway between the office building and the storage tanks. On the bottle filling platform are scales and an electric remote control switch. This enables the operator to turn on or shut off the flow of gas. On the opposite side of the dock is a butane dispenser for loading motor fuel tanks.

◆ ◆

Hertz Drivurself Is Equipping Big Truck Fleet with Butane

The installation of butane equipment on 44 new General Motors trucks for the Hertz Drivurself Stations was begun during June in the shops of the L. A. Automotive Works, Inc., in Los Angeles.

Each of the trucks will be equipped with American Liquid Gas butane units and will be placed in operation through Hertz Truck Lease Service for delivery of beer. The trucks range from one and one-half tons to five tons capacity.



Home plant of Utilities Distributors, Inc., Portland, Me.

WELL BEGUN— HALF DONE

The sure way of getting off on the right foot in the merchandising of butane and propane burning equipment is proper display. Equipment that is "out in front" moves many times faster than that hidden away on a shelf.

The display board shown at the left is available at the price of the equipment shown thereon. Order this selection now.

Separate catalogs are available on Burners and Torches. Write for a copy of either or both of these catalogs.

★ *We are prepared to design and install industrial butane standby plants, public service gas plants, as well as automotive and stationary engine conversions. Your inquiries are solicited.*

RANSOME COMPANY

Manufacturers of Forster Torches and Burners

Distributors of Natural and Liquefied Gas Appliances

4030 HOLLIS STREET **EMERYVILLE, CALIF.**

RANSOME

Important National Defense Paper for L.P.G.A. Meeting

Has Hitler taken a lesson from American trucking and farming operations?

Is the secret of his motorized blitzkrieg fuel supply to be found in conservation of gasoline and motor fuel and the behind-the-lines use of liquefied petroleum gas, largely produced from this country's natural gasoline? If war should come to America, will we, too, conserve our gasoline and motor oil for vastly expanded air forces and motorized military equipment and let the tremendously large, unused reserves of LPG become our emergency fuel?

Henry N. Wade, Los Angeles consulting engineer, is scheduled to answer these questions in an important national defense paper to be presented before the annual Spring meeting of the Pacific Coast Section, Liquefied Petroleum Gas Association, in Santa Barbara, Calif., June 27-28.

J. Woodward Martin, Dallas, Texas, president of the Association, will open the convention, and will be followed by George Prussing, Harry I. Horn, C. E. McCartney, G. J. Harman, F. A. Allen, and R. G. Logue, who will discuss a wide range of industry subjects.

◆ ◆

American Recording Chart Co. Opens New Los Angeles Plant

In planning the layout and equipment of its new Los Angeles plant at 3113 East 11th Street, the American Recording Chart Co. has utilized many developments in factory modernization ideas that will contribute to product accuracy and employe efficiency, according to James Dunn, manager. The building was occupied in May. (See photo below.)

Among the provisions are gas air-conditioning of the plant for constant control of every manufacturing process and the enlargement of the plate making department and laboratory, equipped for precision work and accurate testing of materials. The printing department, where Arcco charts are printed and punched in a single operation, is arranged for uninterrupted flow of work.

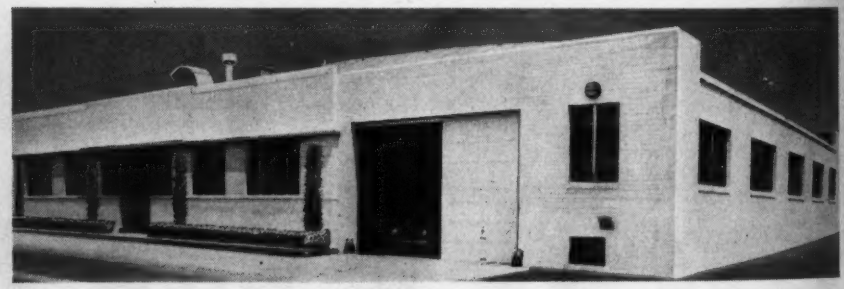
The air-conditioning is of special significance because of the need for storing Arcco charts and specially processed chart paper under controlled humidity.

In addition to Arcco charts, products distributed by the American Recording Chart Co. include Macnick chart clocks, meters and indicators, gas and liquid gravitometers, and other measuring equipment.

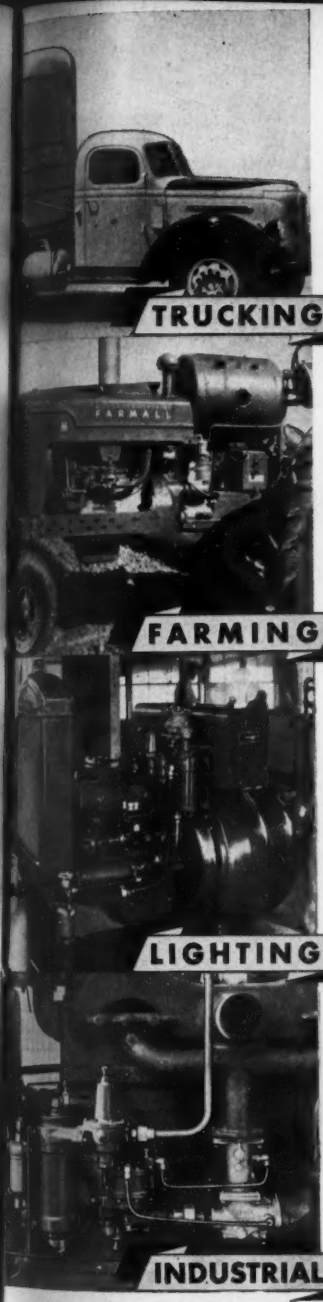
◆ ◆

Gas Heaters Included In EHFA Finance Program

The list of domestic gas appliances which may be financed under the Electric Home and Farm Authority plan has been extended to include circulating gas heaters and gasteam radiators, it was announced recently by Henry D. Brite, commercial manager. Under the plan specified appliances are financed by the EMFA for a minimum down payment of 5% of the cash price of the installed appliance, and a maturity maximum of 36 months.



New Pacific Coast home of American Recording Chart Co.



ENSIGN Butane Carburetion

LEADS IN EVERY FIELD

1. Engineering Research ✓
2. Engine Performance ✓
3. Quality Merchandise ✓
4. Nation-Wide Sales ✓

Ten thousand installations in six years prove the practicability of Butane as an engine fuel, and the dollars and cents advantage in ENSIGN Butane Carburetion.

Operators report savings up to one cent per mile, reductions in maintenance costs from 25% to 40%, 25,000 miles between oil changes, etc. There's plenty of proof when Butane is carbureted by ENSIGN Equipment.

ENSIGN, with more than a quarter-century of experience, builds the finest in carburetion for Butane; ENSIGN leads in every field. There's nothing better at any price. Write for details without obligation.

ENSIGN

CARBURETOR CO. LT

HUNTINGTON PARK, CALIF. • DALLAS, TEX. • CHICAGO,

Oklahoma Corp. Commission Will Enforce Safety Rules

Although handicapped by lack of an appropriation with which to employ inspectors, the oil and gas conservation department of the Oklahoma Corporation Commission, has prepared to strictly enforce the rules and regulations to promote safety in handling and installing of liquefied gas systems.

The rules became effective May 1 and since that time persons installing LPG systems have been required to apply for licenses and bonds. Charles Brill, secretary of the Commission, has been authorized to issue licenses and bonds to owners of LPG companies who are found to be qualified. A committee of the Oklahoma Liquefied Petroleum Gas Association is cooperating with the Commission in investigating and certifying those qualified to handle the gases.

Floyd Green, assistant attorney of the oil and gas conservation department of the Commission, said that after July 1, no person will be allowed to make any installation of an LPG system unless he is properly licensed and his bond is on file.

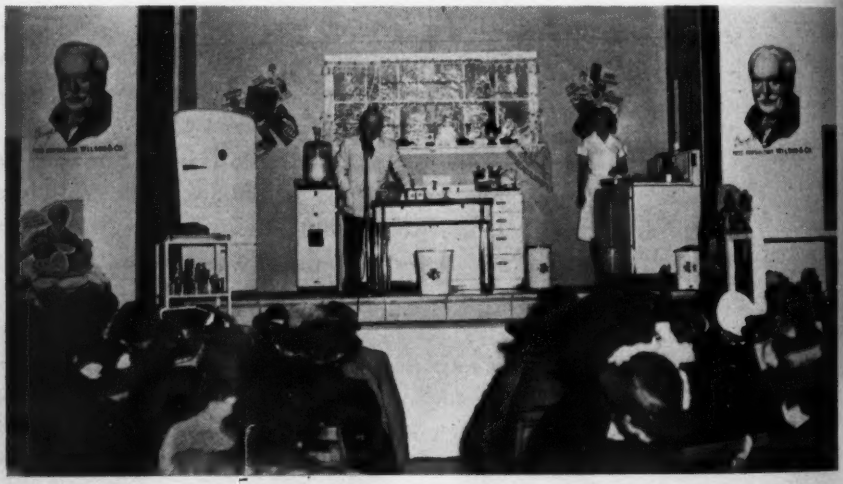
The Oklahoma Liquefied Petroleum Gas Association has promised to report to the commission, after that date, any installations not made by a licensed and bonded installer. The next legislature will be asked for an appropriation for employment of inspectors, Mr. Green stated.

◆ ◆

Elkins Butane Gas Co. Opens Branch in Neosho, Mo.

The Elkins Butane Gas Co., with branches in several Missouri towns, has opened a new office in Neosho, Mo. Lloyd L. Cantrell, a partner in the company, will have charge.

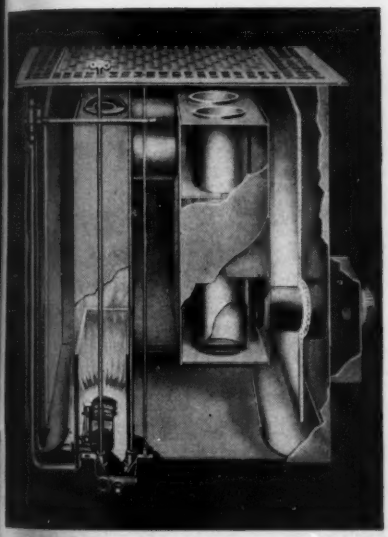
In addition to handling gas, a full line of appliances has been stocked.



An audience at the Famous-Barr Co. department store, St. Louis, recently watched a cooking demonstration that was directed by the noted chef, George Rector, and his assistant. There was no natural gas connection in the auditorium, so the Shellane Department of Shell Oil Co., Inc., hooked up a supply of Shellane bottled gas, to the enthusiastic approval of Mr. Rector who was astonished at the rapidity with which it cooked.

Get in on the Ground Floor

DON'T MISS THESE SPACE HEATING PROFITS



Yes, with WARD Floor Furnaces you can *get in on the ground floor* of hundreds of homes where you are not at present enjoying space heating profits.

A WARD Floor Furnace gets you in and provides a *permanent* outlet for your gas because a WARD becomes a permanent part of the house. It is the simplest, most practical means of putting space heating service with liquefied petroleum gases into homes you serve.

All model WARDS are equipped with our 100% SAFETY PILOT for *double-dependability* with butane-propane gases.

Guaranteed ten years...built for a lifetime of heating service...and profit.

Write for our latest catalog

☆ No basement necessary

☆ Furnace hangs beneath floor

☆ Register is all you see

SINCE 1909

WARD 100% SAFETY PILOT

FLOOR FURNACE

WARD HEATER CO. · LOS ANGELES, CALIF.

COMPLETE FACILITIES

BUTANE
or
PROPANE

Vitally important to every retail marketer of these products, is a dependable and reliable source of supply. Such assurance is yours when you buy Philgas Butane or Propane. Without qualification, Philgas has the most complete production, storage and shipping facilities in the industry. Philgas service gives you high-quality products produced according to rigid specifications plus deliveries when, where, and as you want them.

Philgas
DEPARTMENT

PHILLIPS PETROLEUM COMPANY
GENERAL MOTORS BUILDING
DETROIT, MICHIGAN

NEW YORK
PHILADELPHIA
CHICAGO
MILWAUKEE
ST. LOUIS
AMARILLO

BARTLESVILLE, OKLA.

THE NATION'S LARGEST MARKETER OF LIQUEFIED PETROLEUM GASES

I. C. C. Brings Private Carriers Under Safety Regulations

Private carriers engaged in interstate and foreign commerce will be subject to the same safety regulations as common and contract carriers on and after Aug. 1, under a ruling of the Interstate Commerce Commission dated May 1. Exceptions were granted farmers and truckers of farm produce, and also to driver-salesmen.

In its findings of fact the Commission estimates that about 750,000 vehicles will be subject to the new order. This is about 20% of all private carriers, which number about 3,500,000, the greater part of which are engaged in intrastate commerce.

The safety regulations cover the qualifications of drivers, the driving of vehicles, necessary parts and accessories, hours of service of drivers and inspection and maintenance of vehicles.

Since the Commission's ruling on Dec. 23, 1936, regulating common and contract carriers, 36 states have adopted the regulations in whole or part. The same procedure probably will be followed with regard to private carriers so that it will be only a matter of time before practically all of them are subject to safety regulations.

In its review of the proceedings, the Commission indicated that it will be necessary to ask Congress for an appropriation to make it possible to enforce the order.

◆ ◆

Automatic Gas Equipment Co. Opens Branches in Two States

Automatic Gas Equipment Co., of Dallas, Texas, has opened branches, according to C. J. Bender, president, in Lubbock, Texas, and Roswell, N. M., in order to better serve their dealers located in these areas. The Lubbock branch is headquartered at the Armstrong Transfer and Storage Co. and the Roswell branch at Sacra Brothers. A complete stock of Automatic and Eveready gas systems will be carried at both plants.

Mr. Bender states that the business of his company for the current period has increased 300% over last year's same period.

CARBURETION

Symbol of Leadership

Algas has pioneered the butane carburetion field since the inception of the LPG industry. The Algas trademark on a butane carburetor or converter is your guarantee of quality workmanship and design.

Thousands of installations testify to Algas efficiency. Designed to increase performance and lower costs on your equipment . . . trucks, buses, tractors, stationery engines.

CARBURETION

WRITE FOR DETAILS

AMERICAN LIQUID GAS CORPORATION

1109 SANTA FE AVENUE LOS ANGELES, CALIF.

Are You in a Haze?

Many are when it comes to technical questions and new situations arising in the varied applications of liquefied petroleum gas, equipment and appliances.

Maybe we can help you. If confronted by conditions you do not understand or problems that are beyond your experience, ask

Butane-Propane News Research Department

for assistance. Our technical staff will gladly endeavor to answer all legitimate inquiries (except legal and financial) about the LPG industry which regular subscribers choose to submit.

Use this sheet or your own letterhead.

Your Name.....

Your Position.....

Your Company.....

Your Address.....

.....

Your Question.....

.....

.....

.....

.....

.....

Mail to BUTANE-PROPANE *News*, 1709 W. 8th St., Los Angeles, Calif.

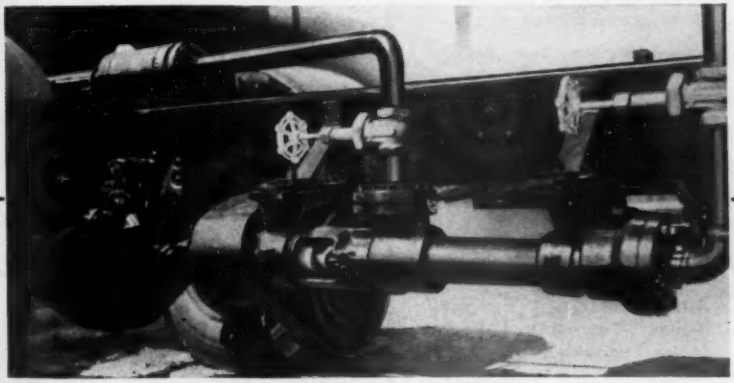
MOYNO L.P.G. PUMPS

Tailored to Tank Truck Trade

The Moyno 2-Stage L.P.G. Pump was designed to insure tank truck operators safe, economical, trouble-free distribution of butane and propane.

It is capable of handling differential pressures up to 150 P.S.I. Its physical construction permits length-wise mounting along truck's chassis and simple V-belt connection with power take-off, as in the photo below.

Get complete details on this revolutionary pump before equipping *your* trucks. Mail coupon TODAY.



ROBBINS & MYERS, Inc.

MOYNO PUMP DIVISION

SPRINGFIELD, OHIO

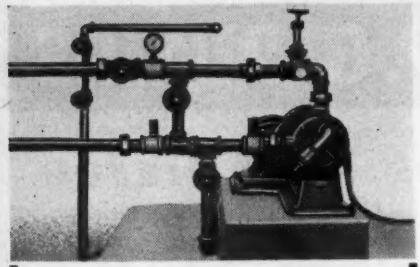
ROBBINS & MYERS, Inc.
Moyno Pump Division, Dept. C
Springfield, Ohio

Please send descriptive bulletin on
☐ Moyno 2-Stage tank truck pump
☐ Moyno single-stage bulk station pump

*Name*_____

*Address*_____

*City*_____ *State*_____



BUILT FOR BUTANE

If you're handling Butane and Propane, you'll be interested in these pumping facts:

Viking Butane and Propane Pumps are designed with an extra long stuffing box.

They are equipped with 10 rings of special packing.

Treated gaskets on head and flange.

Available in all iron or bronze construction . . . 20, 35, 50 and 90 GMP capacity.

Selection of Bulk Station, Truck Mounting and Hand Driven models.

Bulletin 2301-40 gives you complete data—write for a copy.

Look For This Trade Mark—The Sign of a Genuine Viking

VIKING
PUMP COMPANY
CEDAR FALLS, IOWA

S and H Butane Co. Will Serve San Gabriel Valley LPG Users

Entering the butane power field less than a year ago, the S and H Butane Co., located at West Holt and Erie, near Pomona, Calif., has joined the growing list of filling stations that are providing fuel to the butane-equipped trucks and tractors throughout the country.

In the 10-month period that J. W. Spears and his associates have been in the butane field the organization has made 80 truck and tractor installations in the valley. The servicing of these installations, plus the business he gets from highway trade, has jumped the volume of butane sold to an average 10,000 gals. monthly.

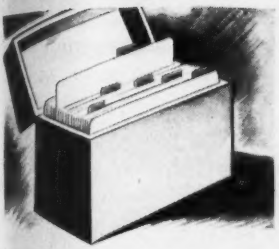
Ensign carburetors are used on S and H conversions, Mr. Spears states, and the success of installations, both on fleet and private jobs, has created a growing business for his company. The largest fleet conversion yet made by the company was the installation of 10 units for the Prado dam job near Corona, Calif. Engineers on the dam report that the saving from butane is far greater than any experienced with other fuels.

◆ ◆

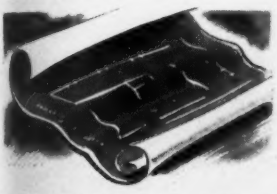
Last Year Was Safest For Petroleum Workers

Petroleum-industry employes worked more safely in 1939 than in any year since adequate records have been kept. This favorable industrial safety record is reported in "Annual Summary of Injuries in the Petroleum Industry for 1939," a 20-page booklet giving detailed data on frequency and severity of injuries by branches of the industry, recently issued by the American Petroleum Institute's Department of Accident Prevention, H. N. Blakeslee, director of the department, has announced.

The 1939 report, which includes complete data for 315,731 workers representing approximately 70% of employes in all branches of the industry except retail marketing, revealed an over-all safety record 9.7% better than in 1938, the previous record year, and 49.6% better than in 1929, the first year in which adequate records were collected.



DOMESTIC SUPPLY METHODS — Sales methods, marketing information, construction of plant facilities, are available to domestic suppliers who are customers of Shell.



INDUSTRIAL USES — Shell engineers are thoroughly experienced in all industrial heating application such as heat-treating and high temperature work. They are prepared to help you in design of new equipment, development of new processes.

COMMERCIAL USES—Shell engineers have helped develop processes for the use of liquefied petroleum gas in such widely varied services as gas enrichment, internal-combustion engine fuel, hotel kitchen and dining car fuel, etc.

NO MATTER WHAT THE PROBLEM...

Experience in every use is at your command when you specify Shell Liquefied Petroleum Gas

THROUGH years of experience, Shell has accumulated a wide variety of information on the uses of liquefied petroleum gas.

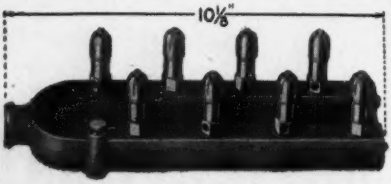
The breadth of this experience assures you of competent advice on such diversified subjects as equipment design, application methods, storage and handling methods, construction of facilities, and marketing information for domestic suppliers.

The length of this experience assures you of the soundness of the service offered you by the Shell engineering staff.

Shell's experience, Shell's technical service are as near to you as your phone. Simply call the nearest Shell office.

SHELL LIQUEFIED PETROLEUM GAS

Offices of SHELL OIL COMPANY, INCORPORATED • ST. LOUIS • SAN FRANCISCO • NEW YORK
INDIANAPOLIS • CHICAGO • MINNEAPOLIS • JACKSONVILLE • DETROIT • NEW ORLEANS • CLEVELAND



No. C. L-80 Burner

BARBER APPLIANCE BURNERS

For every appliance, there is a Barber Burner unit with proper jets, and correctly designed, to suit the combustion requirements of Butane or Propane Gas, and to fit the appliance itself. Eliminate servicing and back firing. Every distributor of these fuels, as well as appliance builders, can best serve their customers by recommending the use of genuine Barber Burners. Submit your burner problems to us. Write for Catalog showing complete Barber line.

The Barber Gas Burner Co.

3704 Superior Ave. Cleveland, Ohio

N O W !

WARREN - GAS
Specialized
BUTANE and PROPANE
In Your Territory

- **Dependable source of supply to our customers at all times.**
- **Manufactured under rigid specifications for your assurance.**
- **Available from Albuquerque to Atlanta—Chicago to Galveston.**

Shipping points strategically located for delivery into Kansas, Oklahoma, New Mexico, Texas, Louisiana, Arkansas, Mississippi, Alabama, Georgia, Florida, Nebraska, Iowa, Illinois, Tennessee, Kentucky and the Carolinas.

PHONE - WRITE - WIRE

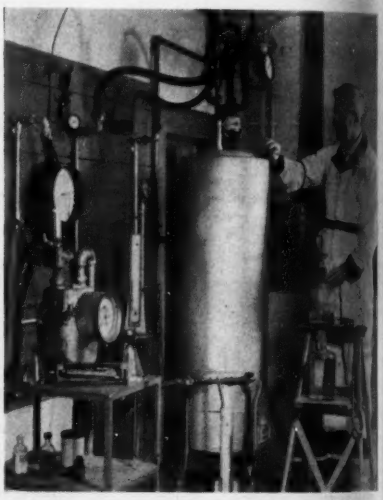
WARREN
PETROLEUM CORPORATION
TULSA, OKLAHOMA
P. O. Box 1589 • L. D. 321

Pacific Gas Radiator Co. Completes Plant Enlargement

With new facilities available in their Los Angeles manufacturing plant, the Pacific Gas Radiator Co. holds the position today as one of the largest heating equipment manufacturers west of the Rockies.

Twenty-seven years in the manufacturing of gas heating appliances have helped to make the Pacific line one that is known throughout the entire nation. The increase of sales and the development of new lines—such as is evidenced in the LPG appliances now available—has made necessary the expansion of factory facilities.

An entire new unit was added to the plant during the past year. In this section of the factory are large, air-cooled offices for executives and office workers, show rooms, printing plant and space for research and promotion activities.



Engineer checking new appliances in Pacific Gas Radiator Co.'s laboratory.

From experimental laboratory to modern show rooms, this factory is one that typifies the growth of the gas industry. Every step in the complicated process of manufacturing gas appliances can be carried on in the departments of the factory.

Butane Heating System For Oklahoma School

W. S. McMichael, heating engineer, of the Oklahoma Automatic Gas Co., Oklahoma City, Okla., has installed a butane gas heating system in the Hillsdale, Okla., school building.

The new system includes 14 butane gas space heaters, with a total capacity of 930,000 B.t.u.'s per hour. Each heater is equipped with a 100% safety pilot light and a thermostat. Eight of the heaters have hood and fan assemblies to insure proper circulation and even temperatures of heat and air in the school rooms.

The Oklahoma Automatic Gas Co. also

W. S. McMichael, heating engineer, Oklahoma Automatic Gas Co.

is installing a large tank and proper auxiliary equipment to insure good service under all weather conditions, according to C. Ralph Jones, a partner with L. H. Hughes in the business. The equipment is expected to be ready for service by September 1.

◆ ◆

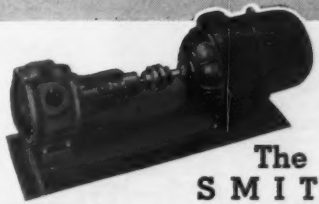
Druid Butane Gas Co. Opens Two New Branch Offices

Druid Butane Gas Co., Tuscaloosa, Ala., has recently opened two branch offices at Bremen and Gainesville, Ga. According to Brant Maynard, of the company, they have also completed an 18,000-gal. butane bulk plant at Temple, Ga.

SUPERIOR PERFORMANCE

Definitely established

IN SERVICE



The SMITH *Butane-Propane* PUMP

The decided advantages being proven by Smith Pumps in actual service are so pronounced that a great many users are now adopting them as standard equipment. We invite you to compare the actual performance of the Smith Pump with your present or other equipment.

The Smith Pump is especially designed to withstand the high pressures required for Butane-Propane service and operate without lubrication. Its new and radically different features eliminate the difficult dispensing problems previously encountered, such as:

Packing box leaks, inadequate differential pressures, frozen packing boxes, excessive wear, and loss of efficiency.

PUMPS FOR ALL SERVICES

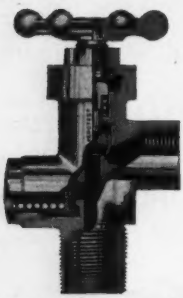
Bulk Plants, Dispensing, Bottle Filling, Tank Trucks, Refineries, Pipe Lines, Etc.

Write for Descriptive Bulletin.

SMITH *Precision Products* **COMPANY**

1135 MISSION STREET
SOUTH PASADENA, CALIFORNIA

KEROTEST
CYLINDER VALVES



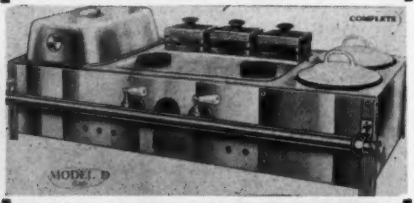
The valve illustrated herein has been proved in service by many of the leading manufacturers and distributors of liquefied petroleum and includes the famous KEROTEST diaphragm packless internal with automatic spring relief type safety device.

KEROTEST

KEROTEST MANUFACTURING COMPANY
PITTSBURGH PA

Sells on Sight!

MEXIHOT BARBECUE
HAMBURGER MACHINES



Cash in on this popular equipment . . . Sells on sight to drug stores, roadside stands, tap rooms and cafes where you have not been able to sell your gas service before. The Model D above sells for $38.50, other models lower. This equipment prepares barbecue by the Permeation method. Prospects waiting to buy . . . write today for distributors' prices.

Department B P
DICKERSON MANUFACTURING CO.
Springfield, Missouri

Harold W. Wickstrom to Furnish Plans for Big Standby Plant

The City of Long Beach (Calif.) has retained Harold W. Wickstrom, consulting engineer of Los Angeles, to furnish plans and specifications for a butane-propane air mix standby plant to augment their natural gas supply during peak loads, and to provide standby service in case of line failure. Plant construction and equipment bids will be called for about July 1, with the completion date set for Dec. 15.

The plant will have a capacity of 500,000 cu. ft. per hour and sufficient storage for liquefied petroleum gas will be provided to take care of an equivalent of approximately 50,000,000 cu. ft. of natural gas.

The City of Long Beach operates a municipal gas distribution system and obtains their natural gas from the nearby oil fields. The Long Beach Gas Department serves approximately 50,000 consumers with an annual send-out of over 3,500,000,000 cu. ft.

◆ ◆

Home Supply Co. Moves Into New Quarters

The Home Supply Co., of Dubuque, Iowa, has recently moved into new and larger quarters at 976 Main street. It was formerly at 1154 Iowa street.

Established for 15 years, this company, under the presidency of J. C. Gantz, has gradually broadened its activities until it now has an organization of 250 dealers in Iowa, Wisconsin and Illinois. It was a pioneer in the bottled gas field.

◆ ◆

Frey's Hardware Will Sell Butane in Three States

John Frey, of Frey's Hardware, Belle Fourche, S. D., has secured franchises for the sale of butane gas, gas systems and appliances for specific territory in three states. In South Dakota he has Butte and Harding counties; in Montana, Fallon and Carter counties, and in Wyoming, Crook county.

A bulk plant in being installed and servicing and delivery equipment acquired

Big Outdoor Show Attendance Proves Interest in Butane

More than a thousand interested spectators were in attendance at the Parkhill-Wade Equipment and Appliance Show, held June 8, at the company's plant in Los Angeles.

Crowds of dealers, truckmen, and mechanics began to gather early in the day for the demonstration of butane utilization and handling equipment. Men from every section of Southern California, as well as some from as far north as San Francisco, were in the group, all eager to learn more about butane and propane equipment and their many uses.

The Parkhill-Wade organization presented a complete cross-section of developments in the industry, with an interesting series of talks on various phases of LPG equipment interspersed during the day.

The speakers and their subjects included: Robert Wyker, Ensign Carburetor Co., "Carburetion;" R. K. Lamont, Parkhill-Wade Co., "Metering and Pumping;" T. Melsheimer, Parkhill-Wade, "Welding and Burners and Torches."

◆ ◆

Texas Butane Gas Co. Adds Woman to Sales Force

Mrs. Lena Anderson, with eight years of selling experience, has become a new member of the sales department of the Texas Butane Gas Co. in Wichita Falls, Texas. Mrs. Anderson will specialize in refrigeration and other gas appliance sales.

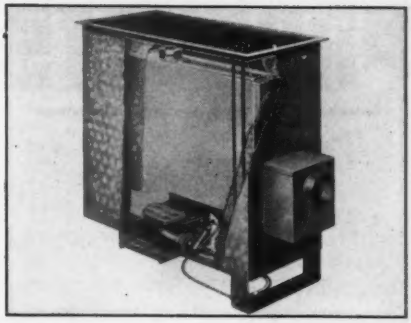
◆ ◆

Gas Firm Enlarges Space

The Willard F. Martin store in Maysville, Mo., has recently doubled its display space by taking in the building adjoining its location. The owners of the business are Willard F. Martin, Oscar Warden and Ronald Pulley.

◆ ◆

Ralph Weaver has been granted a permit to construct and operate a butane distributing plant on Kifer Road, near San Jose, Calif., by the Santa Clara county board of supervisors.



GOING TO TOWN!

You can't beat the Bryant Floor Furnace for selling to small homes, or to stores and restaurants, barber shops, and similar places on "Main Street." And three sizes—20,000, 30,000 or 40,000 B.T.U. per hour input—give you plenty of profitable sales opportunities.

Three types of control systems are available: (1) manual—light with taper; (2) manual—with electric ignition; (3) automatic thermostatic control. Exclusive Bryant Powerstat Pilot on all units. One of the first floor furnaces to gain AGA approval under new and stricter 1941 requirements.

You can "Go to Town" with this unit—and your customers will enjoy its comfortable and inexpensive heat. Ask for details.

THE BRYANT HEATER COMPANY

17825 ST. CLAIR AVENUE

CLEVELAND, OHIO

PRODUCTS

Hose Coupling

Ever-Tight Coupling Corp., 254 W. 54th St., New York City.

Model: Ever-Tight.

Description: Ever-Tight heavy duty couplings are made of Government standard bronze and designed for pressures from 300 to 500 lbs., but hydraulic tests show that they do not leak until pressure reaches 2535 lbs. They eliminate fitting lugs or threads when connecting delivery hose to faucet. Wear is automatically overcome by compression on the neoprene gasket in swivel. This gasket is stationary, receives no friction and will not become worn or buckled. No tools required to make connection tight. Will operate even if ice has formed on them. These couplings can be used for any fluid, including butane and propane.

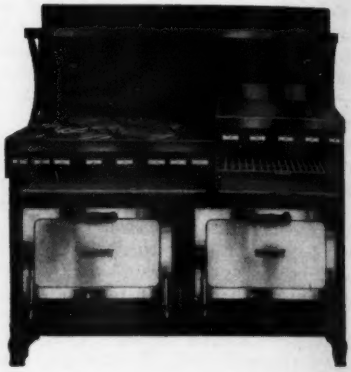
◆ ◆

Commercial Range

Comstock-Castle Stove Co., Quincy, Ill.

Model: C-2500-BG.

Description: The Economy restaurant range comes regularly with six 7-in. star burners under three open-grate sections, and six string burners beneath griddle-plate. All Economy ranges for hotels, restaurants, lunch counters or cafes are custom-built to individual order, then service-tested before shipment, using same type of gas as specified for installation.



Distributors interested in obtaining further information on models engineered especially for LPG should write for the new catalog M2.

Specifications: Ovens, 2—24x20x14 in.; top overall—57x29 in.; open top grates, 3—29x11¼ in.; griddle plate—22½x 29 in.; height to top—35 in.; height with shelf—57 in.; weight—790 lbs.

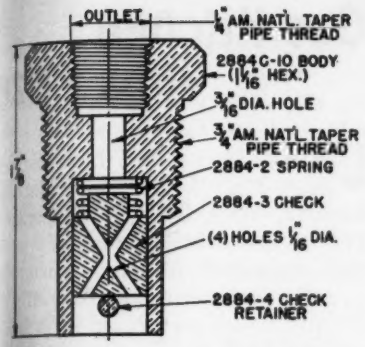
◆ ◆

Check Valve

The Bastian-Blessing Co., 240 E. Ontario St., Chicago, Ill.

Model: No. 2884C.

Description: The Rego No. 2884C excess flow check valve is designed primarily for use with pressure indicating gages. It will protect against excessive discharge of gas to atmosphere in the event the pressure gage is accidentally broken off. The pressure gage may be attached directly to the No. 2884C excess flow check valve or a shut-off valve may be installed between the excess flow check valve and the gage. It will close with a flow of approximately 140 cu. ft. of propane gas per hour at 100 lbs. pres-



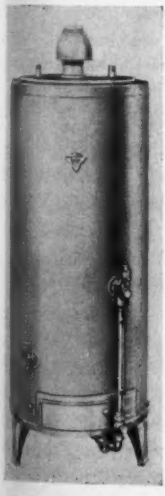
sure; 80 cu. ft. of butane gas per hour at 25 lbs. pressure. It may be installed either in a horizontal position or a vertical position with flow upwards. Pressure gages with restrictor plugs must not be used with excess flow check valves.

◆ ◆

Water Heater

American Radiator & Standard Sanitary Corp., Pittsburgh, Pa.

Model: New AGP Dictator. Approved by A. G. A. for LPG service.



Description: This gas-fired storage water heater has been designed to secure low cost hot water service automatically. It is available in 20-, 30-, 40- and 75-gal. capacities. Has strengthened copper tank. Jacket is finished in dark gray enamel. Equipped with snap action thermostat that provides for 100% shut-off to main burner and pilot in event of pilot failure. Other models at lower prices include the AGP Clipper and the AGP Budget, with galvanized steel tanks and jackets finished in white enamel with aluminum trim, the first ranging in capacity from 20 to 75 gals., and the second from 15 to 40 gals.

◆ ◆

Domestic Range

Round Oak Co., Dowagiac, Mich.

Model: Marquette.

Description: The new Marquette is a divided top unit, factory-built for natural, manufactured or bottled gas. It has the knee-high Rollo-Matic deep broiler

with polished aluminum smokeless pan, reflector and rack. In operation, the broiler glides out automatically when door is opened. The pan and rack are adjustable to any height, making it both possible and practical to broil meat loaf, chickens, even turkeys. It is of flush-to-wall body construction with solid, cabinet-type steel base. Other standard features include automatic Robertshaw combination oven heat control, one giant and three streamlined double-action multi-speed simmer-save top burners, two automatic top burner flash lighters, Reflecto bowl porcelain cast iron top grates, cast porcelain removable grids, acid-resisting porcelain cooking top and covers, two porcelain drip pans and folding split top covers.

For Your Convenience

We maintain a most complete stock of:

- ★ REGULATORS
- ★ VALVES
- ★ FITTINGS
- ★ HOSE
- ★ PUMPS

and other materials for the Butane-Propane Industry.

ENGINEERING SERVICE
AT YOUR DISPOSAL

L. C. RONEY INC.
1740-44 W. 59th ST. · LOS ANGELES, CALIF.

ROBERTSHAW MANUALS
will help increase your sales

FOR DOMESTIC SALESMEN

"More Income from Gas Ranges"

How can your salesmen sell more gas ranges? This manual shows simply, graphically, convincingly. Thousands of salesmen have greeted it with enthusiasm, are putting it to effective use.

FOR COMMERCIAL SALESMEN

"Hidden Losses in Your Kitchen and How to Stop Them"

The latest developments in commercial gas cooking equipment are brought together in this manual, now used by many bottled gas dealers.

Write for free copies

ROBERTSHAW THERMOSTAT COMPANY
YOUNGWOOD, PA.

Gas Kitchen Wins Prize

LIVING on a rented farm did not deter Mrs. W. H. (Joe) Habben, Route 2, Jones, Okla., from spending $405 to make her home entirely modern. As a result of her enterprise she recently was awarded first prize of $25 in merchandise in the farm home

Mrs. W. H. Habben waiting for a pie to bake in her modern butane gas range. The automatic water heater shown uses butane, also.

improvement contest sponsored by the Oklahoma City, Okla., Chamber of Commerce and conducted by the home demonstration department, Oklahoma A. & M., College, Stillwater.

Mrs. Habben qualified for first prize in Class "B" of the contest, comprising women living on rented farms.

The Habbens have lived on the same rented farm for 20 years. About two and a half years ago they started modernizing it by installing butane equipment for cooking, hot water heating and bathroom heating.

"I had always wanted modern

home improvements and made up my mind to have the same conveniences as women who live in town," said Mrs. Habben. Even while she said this she was baking a pie in a modern, shiny, butane gas range. Beside it stood a 20-gal. automatic water heater, also utilizing butane and keeping hot water available winter and summer for baths, dish and clothes washing and other purposes.

Buried about 35 ft. north of the house is a 240-gal. butane gas tank, properly equipped and connected to the house appliances. The connecting pipe line has a drop of six or seven inches from the appliances to the tank so that the liquid, if any forms in the lines, is drained away from the appliances by gravity.

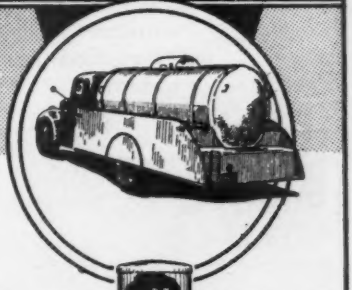
Gas for Bathroom

In addition to the butane range and automatic hot water tank, a small butane gas heater is installed in the bathroom. The bathroom is modern in every respect and is supplied with water by a water pressure system operated by a one-third horsepower electric motor. The motor pumps the water from a well into a 42-gal. underground pressure tank. This system supplies water not only for the bathroom but for the kitchen and other farm purposes.

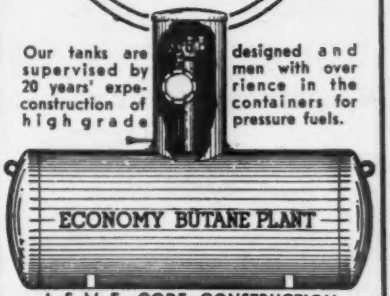
Mrs. Habben said that she liked her butane gas system so well that she plans on installing heating appliances for the whole house. "During two winters and one summer of operation we have never had the slightest trouble with our butane gas system," Mrs. Habben observed proudly. "We have always had plenty of heat for cook-

LOOK TO THE Leader FOR BETTER TANK Values

BUTANE–PROPANE....
★ UNDERGROUND TANKS
★ BULK STORAGE TANKS
★ TRUCK TANKS
★ SKID TANKS



Our tanks are designed and supervised by men with over 20 years' experience in the construction of containers for high grade pressure fuels.



A. S. M. E. CODE CONSTRUCTION
ECONOMY BUTANE-PROPANE SYSTEMS are constructed for 100.8 lb., 125 lb., and 175 lb. working pressure for underground use; 200 lb. working pressure for above ground. Approved by Underwriters' Laboratories; inspected by Ocean Accident & Guarantee Corp., Ltd. Write, Phone or Wire for Details!

"TANKS BY BANKS"
DALLAS TANK AND WELDING CO., INC.
201-5 West Commerce Street
DALLAS, TEXAS

For Safety and Economy

ETHYL MERCAPTAN

Purified

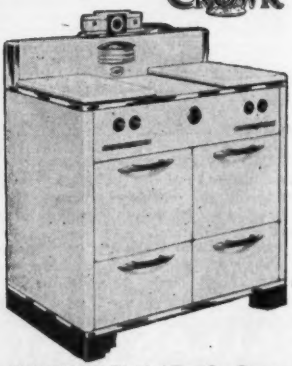
The ACCEPTED standard odorant for liquefied petroleum gases.

MALLINCKRODT CHEMICAL WORKS

ST. LOUIS NEW YORK

APPROVED GAS RANGES FOR LIQUEFIED PETROLEUM GAS

CROWN



Model 135-04 Divided Top Gas Range

Write Today for Catalog Showing Complete Line

CROWN STOVE WORKS

4627-35 W. 12th Place Chicago, Illinois

ing and hot water purposes with even distribution winter and summer. My cooking and baking operations always have been perfectly satisfactory."

Mrs. Habben also is satisfied with the cost of her butane service. For the three months from February 1 to May 1, which included some extremely cold winter weather, it was only $8.

The Habbens did not start to modernize their farm home with any idea of winning prizes but finally decided to enter the 1939 contest. The butane installations and equipment and appliances represent about $260 of a total of $405 spent in modernizing the equipment and appliances for butane gas and electrical conveniences.

The Habben farm is located in a fertile valley about 20 miles northeast of Oklahoma City. It is modernly equipped in every way. In addition to the butane installations, an Oklahoma Gas & Electric Co. highline supplies current to operate motors for pumping water, operating a cream separator, an air compressor, emery wheel, radio, electric iron, toaster, waffle iron and sweeper.

The farm also has two gasoline pumps to furnish fuel for automobiles, tractors and other motorized agricultural equipment.

◆ ◆

C. E. Simcoe Makes 118 Installations in 18 Months

Celebrating his first 18 months in business, C. E. Simcoe, of Corydon, Ind., made his 118th installation of a butane system on May 22, according to news reports.

Mr. Simcoe is agent in Harrison and Crawford counties for Dri-Gas, product of the Illinois Bottled Gas Co.

Gas Equipment Co., Inc., Finds Office Expansion Necessary

Gas Equipment Co., Inc., of Dallas, Texas, has enlarged its offices and warehouse facilities to the extent of 700 sq. ft. of additional floor space. The company moved into the present new quarters in April, 1939, but at the end of the year found it necessary to expand still further. Through the addition the space formerly occupied by the office is given over to warehouse space with the new space being converted into the permanent office.

The company is distributor for the liquefied petroleum products of The Bastian-Blessing Co., Hackney cylinders manufactured by Pressed Steel Tank Co., and the L. C. Roney products. The company also operates Gas Equipment Supply Co. in Atlanta, Ga. The latter company, which began its operation in July, 1939, under the management of J. A. Fowler, has the distribution of the above named products in the Southeastern states.

◆ ◆

Ralph H. Van Cloud Becomes Handigas Sales Manager

Ralph H. Van Cloud, district distributor of "Handigas" at Newton Falls, Ohio, has been elected general sales manager of the Handigas organization by the board of directors. Mr. Van Cloud's headquarters will be in Newton Falls, but he will spend much time at the Lima, Ohio, and other branches of his company.

While operations in the past have been confined to Ohio districts, it is the plan of the company to expand into Pennsylvania and Indiana.

◆ ◆

Nash Brothers Enter LPG Field in Oklahoma

The Nash Brothers Implement Co. has established an office in Guyman, Okla., and will supply butane and propane to farm and town homes in that area.

A new 3-ton tank truck has been purchased. It is a cab-over-engine type, carries two tanks with a total capacity of 1500 gals., equipped to run on butane.

Reduce
SERVICE CALLS
... save money
TROUBLE-FREE
PACKLESS TYPE MANIFOLD
Has 2 manifold valves that operate on cam and lever principle. Practically wearproof. Diaphragm seals gas against leakage into upper casing.
TYPE
721M

FISHER

TWO DRUM ASSEMBLY WITH THROW-OVER MANIFOLD

- Positive stop at end of lever's travel arc prevents manifold breakage.
- Lever always points to supply cylinder.
- Maintains positive shut-off on reverse cylinder at all times.
- Capacity 90 cu. ft. Propane per hr. on 10 lbs. cylinder pressure. Greater capacities on higher cylinder pressures.
- Listed as standard by the Underwriters Laboratories.

WRITE TODAY for FREE Catalog and latest prices on TYPE 721M and complete line of FISHER Regulators.

FISHER GOVERNOR COMPANY

914 FISHER BLDG. MARSHALLTOWN, IOWA

RESEARCH

● **BUTANE-PROPANE *News* wishes to keep its readers informed regarding technical and practical advances concerning research, manufacture, development, and transportation in the liquefied petroleum gas field. In this column will be found a resume of recently published articles, papers, bulletins and books dealing with the industry's various phases.**

The Wear of Crankshafts with "Lead-Bronze" Bearings—G. G. Williams and H. Ludicke. *S. A. E. Journal*, Mar., 1940, pp. 93-99. Case-hardening is a satisfactory means of reducing crankpin wear with "lead-bronze" or copper-lead bearings, the authors state. They report the result of tests to determine the relative wearing properties of various crankshaft materials when running against a typical copper-lead alloy bearing at a temperature of 212° F. In general and contrary to what was observed with the softer crankpin materials, bearing wear occurred more rapidly than crankpin wear, this result being due largely to high initial wear of the bearings during the early part of the tests. Variations in composition—percentage of lead and tin, and hardness—of the copper-lead bearings did not have a marked effect on the wear obtained. The crankpin materials tested, which were all ground finished, are specified as: a nickel-chrome steel, heat-treated; a nickel steel, not heat-treated; a nickel-chrome-molybdenum steel, both heat-treated and not heat-treated; a carbon steel, both heat-treated and not heat-treated; three cast materials; three chromium-plated materials (two not ground); three other surface-hardening treatments, namely, carburizing, a proprietary hardening process, and nitriding. The testing machine used for the research is virtually a dummy engine in which the bearing under test was inserted in the big end of the connecting rod so that, when the machine was driven at a given speed by an electric motor, the big end was subjected to inertia forces the magnitude of which could be calculated.

"Rubber" from Petroleum Gases — Dexter North. *Chemistry and Metallurgy*, April, 1940, pp. 220-224. Synthetic rubberlike materials are attracting world-wide attention recently as more and more companies intensify their research in this direction. Butadiene and isobutylene polymers appear to offer the best possibilities of competing with natural rubber in the not-too-distant future. A list of the synthetic rubbers manufactured commercially, and the raw material from which they are produced, is given.

Neohexane for 100-Octane Plus — M. E. Clark. *Chemistry and Metallurgy*, April, 1940, pp. 225-227. A new synthetic hydrocarbon made by thermal alkylation surpasses iso-octane itself as a blending agent in aviation motor fuels. Its value hinges on two important properties—high lead susceptibility and high volatility. Typical flow sheets of both the thermal and catalytic alkylation processes are shown.

How Specialty Lubricants are Made —D. M. Considine. *Chemical and Metallurgy*, April, 1940, pp. 230-233. In recent years the making of lubricants has become more and more a chemical manufacturing process instead of a refining operation. Specialty lubricants in the form of oils and greases with chemicals added are made by the Lubri-Zol Corporation, Cleveland, for use in hypoid gears, Diesel engines and elsewhere.

Vaporization Equilibria — Mitchell Gilbert. *Chemistry and Metallurgy*, April, 1940, pp. 234, 235. In *Chemistry and Metallurgy*, April, 1939, p. 228, a chart was published for shortening the time required for equilibrium calculations. In this article the time is cut still further by new charts which eliminate all but three of the preliminary trial calculations.

Statistical Number—*Automotive Industries*, Mar. 1, 1940. This, the 22nd annual statistical issue, contains: Production data; taxes; gasoline and registration fees; new registration data; total registration of motor vehicles; dealer count data. Specifications: Passenger cars; passenger car engine trends; American trucks; outboard motors; bus chassis; stock, marine and commercial vehicle engines; aircraft engines; Diesel engines.

Design, Construction and Operating Features of World's Largest High-Pressure Condensate Recovery and Pressure Maintenance Plant—Ray C. Fish. *Petroleum Engineer*, Feb. 1940, pp. 121, etc. Designed to process 128,000,000 cu. ft. of gas per day, the Coastal Recycling Corporation's plant, Agua Dulce field, Texas, will serve 12,000 acres. Gathering gas at 2000 lb. pressure, recovering gasoline at 1500 lb. pressure, and returning the stripped gas underground at 2500 lb. pressure, the project marks a trend toward high-pressure design.

Furnace Explosions—An Operating Responsibility—H. M. Spring, *Power* Mar., 1940, pp. 153-155. Everything seems to show that explosion doors and other devices can't help much when a real blast occurs. It is up to the operator to steer clear of trouble by knowing what causes explosions and how to prevent them. This article lists the facts the operator needs to know in order to keep his plant safe.

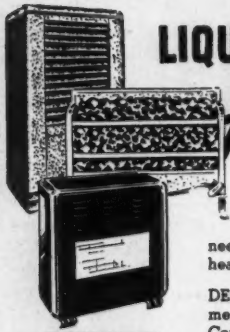
Octane Number, the Refiner's Will-O-the-Wisp—W. W. Scheumann. *Oil & Gas Journal*, April 4, 1940, pp. 14, 15, 98, 99. This article, which was presented at the Wichita annual meeting of the Western Petroleum Refiners Association, reviews briefly the adoption of octane numbers as a measure of the anti-knock performance of gasolines including the changes which developed from time to time as a result of laboratory and road tests. What is octane number?; How do octane numbers relate with road performance?; Difference in methods; Road octane number slightly higher; Performance requirements; Altitude affects requirements; The value of the octane number; The misuse of the octane number; Results from misuse of the octane number. The present situation; The 1939 Research Method; Higher octanes, what value? Also in *Refiner*, April, 1940.

The Material Testing of Cellulose Pipe Wrappers—A. C. Alter. *GAS*, Apr., 1940, pp. 29-31. Some of the desirable characteristics for a cellulose pipe wrapper are: (1) impermeability to oils and water; (2) high softening and melting points; (3) easily applied to the pipe by hand or machine; (4) chemical and physical stability when heated; (5) insoluble in water, air, oils, or soil; (6) high tensile strength, hot or cold; (7) homegeneity; (8) economical to use. Describes test procedures employed by the Southern California Gas Co. to determine characteristics (1), (2) (4), and (6).

The Compressibility of Gases—G. G. Brown. *Petroleum Engineer*, Apr.1, 1940, pp. 132, etc. Part 4.

Pressure-Volume-Temperature Relations for n-Butane—W. B. Kay. *Industrial and Engineering Chemistry*, Mar., 1940, pp. 358-360. In the course of the study of the ethane-*n*-butane system, the following properties of *n*-butane were measured: the vapor pressure and densities of the saturated liquid and vapor from room temperature to the critical points, and compressibility of the liquid and vapor from 100°F. to 600°F., and 35 to 1200 lbs. per sq. in.

Specific Heat Ratios for Hydrocarbons—W. C. Edmister. *Industrial and Engineering Chemistry*, Mar., 1940, pp. 373-375. A chart is presented for estimating Cp Cv (r) ratios for methane, ethylene, ethane, propylene, propane, isobutylene, isobutane, 2-butane, *n*-butane, isopentane, *n*-pentane, benzene, diisopropyl, *n*-hexane, *n*-heptane, diisobutyl, and *n*-octane at reduced pressures up to 1.2 and at reduced temperatures up to 2.5.



LIQUIFIED GAS *Heaters*

Designed to appeal to the most exacting decorative taste and engineered to assure long term heating comfort.

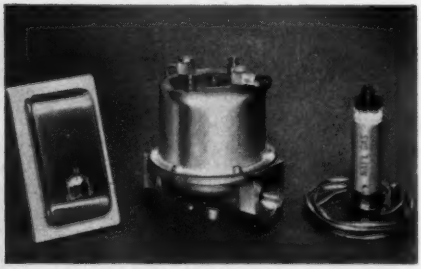
DEALERS will recognize the merit of this time-tested line. Competitively priced . . . with attractive spread for dealer . . . yet minus profit-consuming installation and service costs.

BRILLIANT FIRE

Quality Heating Equipment Since 1846

BRILLIANT FIRE *Gas Heaters*

THE OHIO FOUNDRY & MFG. CO.
STEUBENVILLE, OHIO U.S.A.



PERFECT PACKAGE SET FOR BUTANE SERVICE

These are the reasons for the enthusiastic acceptance of General Controls ALL-GAS control sets for butane-propane service. 1. Pilot generator supplies all the current needed for operation; no external current needed. 2. Absolutely quiet operation. 3. Pilot light failure safely shuts off gas valve. 4. Attractive new flush mounting thermostats. 5. Package set furnished complete, everything you need for safe, accurate remote gas control service.

Send for new 1940 Complete Catalog

GENERAL CONTROLS

267 5th Avenue, New York City — 450 E. Ohio St., Chicago, Ill.

The Whys of the Safety Code

IN the May issue was published in BUTANE-PROPANE *News* the first installment of a series of chapters explaining the objectives sought in the formation of the safety code of the National Board of Fire Underwriters, as contained in Pamphlet No. 58. This code, prepared after many conferences with authorized representatives of the liquefied petroleum gas industry, represents a series of carefully considered safety regulations applicable to the entire country, and is the outgrowth of wide experience.

There may be some clauses whose purposes are not understood by everyone, and it is the hope of this series that the question-and-answer method of discussing the code will result in a better comprehension of its importance and more earnest effort to abide by its rules.

Our staff will gladly furnish further help to any subscriber who wishes more specific knowledge concerning any clause in the code and its correct interpretation. Continuing with Division 1, we come to **Section 5.**

5—Reinstallation of Containers

Why is reinspection necessary on reinstallation of containers?

Reinspection is required of tanks that have been used underground as their condition might be poor, due to corrosion. It also is an opportune time to make inspection, as the exca-

vation has been performed for another reason.

t—Requirements for Construction and Test of All Storage Containers and Markings on Containers.

(a) What is the ASME Code and what is the API-ASME Code?

The ASME Code for Unfired Pressure Vessels is Section VIII of the ASME Boiler Construction Code. It is developed by committees of the American Society of Mechanical Engineers, 29 West 39th St., New York, and is continuously being revised to meet modern practices. The last edition was printed in 1937. It was originally adopted in 1925 and revised in 1927, 1930, 1931, 1932, 1934, 1935 and 1937.

The API-ASME Code for Unfired Pressure Vessels for Petroleum Liquids and Gases was developed by committees from the American Petroleum Institute, 50 West 50th St., New York, and the American Society of Mechanical Engineers. As its name indicates, this code deals with the design and construction of pressure vessels for use of petroleum liquids and gases. It covers a narrower field than the ASME Code and is considered by most of the engineers in the oil industry as a more workable code for the oil industry. It was first published in 1934 and revised in 1936 and 1938. (Copies of these codes can be purchased by the public at nominal prices from the above named societies.)

What is the purpose of these codes and who should use them?

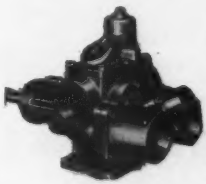
These codes were developed to be a guide to designing engineers and manufacturers, expressing the minimum requirements for good design.

"THE MOST PERFECT PUMP for BUTANE USE"

This unsolicited comment comes from a prominent oil concern* who goes on to say:

"The Granco pump is smooth and does not throw any surge of liquid against the meter which would cause it to spin and make errors in readings."

The smooth positive squeezing action of the Granco pump reduces turbulence in the liquid stream. There are other reasons, too, why Granco pumps are first choice with many leaders in the LPG field. Get the complete story on Granco pumps before you choose equipment for your next installation. Write for illustrated folder and complete information today.



*Name on request.

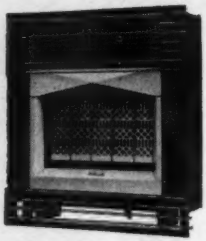
FOR EXTRA GOOD PUMPING EQUIPMENT

Granco

GRANBERG EQUIPMENT, INC.

1308 - 67th Street
Oakland, Calif.

STOCKS AND SERVICE IN PRINCIPAL CITIES

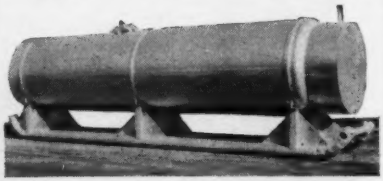


CIRKLAIR
"Circulating Air"
GAS HEATERS

These heaters of advanced design were trade-named "Cirklair" because they actually heat and circulate air without the aid of moving parts. Multiple duct design, which is patented and cannot be had in any other gas heater, does the trick. Many butane dealers are doing a big job with Cirklairs. Write for the interesting Cirklair story.

CIRKLAIR PRODUCTS DIV.
The Folsom Co. "Since 1909"
509-15 Elm **Dallas, Texas**

McNAMAR



FIELD SKID TANKS

- Underground Systems
- Bulk Storage Plants
- Transport Tanks

McNAMAR
BOILER & TANK CO.
TULSA, OKLA. SALEM, ILL.

They should be used only by qualified designers who are able to intelligently interpret their requirements and by the regulatory inspectors to keep the standards of construction of pressure vessels on a safe basis.

Why were these codes necessary?

These codes were formulated to prevent accidents due to the purchase and use of pressure vessels that, because of possible lack of knowledge of the designers and lack of skill of the builders, might be a serious hazard to employes and the public. They follow the practice long in effect of controlling the design and manufacture of steam boilers for the safety of the public. Without some such means of control, it has been proved by past experience that extremely unsafe conditions might exist due to lack of knowledge of the dangers involved.

If there are no regulatory acts in the district served, is it necessary to use code pressure vessels?

If there are no state or local requirements for the use of code vessels, no one can force their use. However, in case of an accident, and should the case be carried into the courts where it is proved that design and construction of a pressure vessel was below code standards, the possibility of successfully defending a damage suit is very poor, as the plaintiff can easily prove negligence on the part of the maker or seller.

Why are Paragraphs U2 to U10 in the ASME Code and Paragraphs WW601 to W606 and Section 1 of the Appendix of the API-ASME Code deleted for LPG tanks?

Paragraph U2 to U10 deal with

safety valves and their maintenance. When this code was written these paragraphs were devised for air or steam vessels. The same holds true of Paragraphs W600 to W606 of the API-ASME Code. Appendix 1 deals with general problems of inspection that are designed to cover high pressure refinery vessels handling corrosive materials and are unnecessarily severe for tanks in LPG service.

(b) Why is shop test needed and how is it performed?

A shop test is needed to check on the workmanship of construction. To be tested under code requirements only certified inspectors are allowed to approve the tank. These men are acquainted with the limits of design and are competent to judge workmanship. Any tank not meeting the requirements will not be stamped until the defects have been remedied.

Is there any hardship upon the manufacturer to require tanks to be built to code specifications?

There is no hardship involved. The codes require certification of welders and a small charge is made for inspection.

(c) What markings are needed on underground tanks and why?

(1) Each tank is to be labeled with a plate according to the code under which it is constructed. For API-ASME and ASME tanks this consists of a tag permanently attached to the tank, giving shell and head thickness, working pressure, manufacturer's name and serial number, test pressure and the API-ASME or ASME stamp. This label must be attached to the tank. In the case of an underground

HOTSTREAM

THE WATER HEATER PROFIT LINE

Every requirement for style, capacity and price can be met with a HOTSTREAM Water Heater, specially designed for economical, efficient, safe operation with Butane or Propane.

. . . That's why HOTSTREAM can make *every prospect a customer.*

For complete information, prices and catalog, write to Hotstream, or in the South, to one of these representatives:

L. M. TAYLOR
3200 Main Street
Dallas, Texas

W. G. BAKER
820 Carondelet St.
New Orleans, La.

R. O. FOARD, JR.
205 Walton Bldg.
Atlanta, Georgia

THE HOTSTREAM HEATER COMPANY
8007 Grand Avenue • Cleveland, Ohio

National Butane Gas Co.

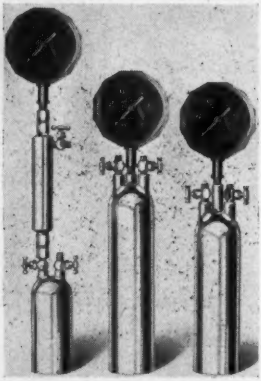
Manufacturers of Above-Ground and Under-Ground Butane Storage Systems and Butane Truck Tanks

Serving the Liquefied Petroleum Gas Dealers Only

PHONE **WRITE**

MEMPHIS, TENN.

BOMBS BY DANIEL



We manufacture a complete line of Vapor and Specific Gravity Bombs for Liquefied Petroleum Gases, that comply with the C. N. G. A. and N. G. A. A. requirements. Write or call for complete information, etc.

DANIEL ORIFICE FITTING CO.

Los Angeles, Calif. **Houston, Tex.**

tank it is necessary to have a duplicate label located where it can be seen from the surface of the ground. These plates are not to be painted over.

(2) Paragraph 2 calls for the name and address of the supplier of the system or the trade name of the system. The use of the word system here refers particularly to semi-bulk underground installations which include a tank, regulator and sometimes a heat exchanger. A number of these systems have been trade-named and have been submitted for approval. System could also be interpreted as meaning the complete installation of tankage, regulators, truck filling equipment, etc., and the name and address of the installing company should be marked in an easily read place. The reason for requiring this marking is to make it possible for inspectors or regulatory officers to notify the builders in case of improper installations. Also, the attaching of the name of the builder or installer has a tendency to prevent slipshod work, as the job is an advertisement of either good or bad work.

(3) The requirement of marking the water capacity in pounds or gallons is to guide the employes that may be called upon to fill the containers. Knowing the water capacity and knowing the specifications of the fuel they are delivering, the responsibility for overfilling can be definitely placed.

(4) The working pressure is included in the code label and is a guide to the inspectors and to the delivery men.

(5) This paragraph is included to definitely advise the fuel dispenser of the highest vapor pressure fuel that

can be safely delivered to the tank. Placing fuel of a higher vapor pressure than allowed by this label into the tank puts the fuel supplier in a position where he may become liable for any accidents due to pop valves opening or tanks failing due to excess pressure. For example, if a supplier put propane with a vapor pressure of 200 lbs. per sq. in. into a tank marked "for fuel having a vapor pressure not to exceed 100 lbs. per sq. in. at 100°F.," the possible hazard might be great.

(6) The wall thickness and head thickness are included in the code label.

(7) Paragraph 7 is written to provide a ready means for the fuel supplier to check when he has filled a container to the maximum allowed, leaving room for liquid expansion due to temperature increase.

Several methods are allowed to take care of the common practice of the industry in different sections of the country. Where the containers are filled by weighing, the tare weight is known and the water capacity is known, from which the total number of pounds allowed in the container can be determined. The temperature of filling has no bearing. In the case of permanent dip pipes to mark the top level, allowance has been made for possible maximum temperature differences, so temperatures do not have to be taken into consideration.

For containers not having permanent dip pipes maximum filling levels can be determined by use of the gaging device. It is necessary, however, to know what the correct outage should be, and for this reason the gag-

SMITH *Butane* METERS SAVE YOU MONEY BY EFFICIENT, ECONOMICAL MEASUREMENT

MASTER BU-40
—where corrosion is a problem.

STANDARD BU 40
—for non-corrosive liquefied gases.

The new BU-40 Smith Butane Meters represent the latest advance in modern metering equipment for Butane or Propane tank trucks and dispensing racks. They combine all of these modern metering advantages: 250 lbs. working pressure—built-in strainers—fast flow—extremely low head loss—rotary positive displacement—precision construction plus guaranteed sustained accuracy. Available with horizontal or vertical dials, with set stop counter or ticket printer.

SMITH METER COMPANY
5743 East Leneve Street
Los Angeles California

SMITH METERS

WRITE FOR THIS BULLETIN
Bulletin 123 gives full details about Smith Butane Meters. Write for your copy today.

AMERICAN CONTROLS

Control Safely

CIAC
API-ASME
ASME

AMERICAN BUTANE and PRESSURE TANKS

Engineered for maximum efficiency with maximum safety, American tanks are as dependably efficient as fine material and expert craftsmanship can make them. This is particularly true of their controls, precision tested for efficiency, 100% code approved for safety. Detailed information and estimates furnished promptly, without obligation.

AMERICAN PIPE & STEEL CORP.
Manufacturers and Distributors
Alhambra California

FREE Complete New CATALOG

Liquefied Petroleum Gas Heating Equipment

- FLOOR FURNACES
- CIRCULATORS
- HEATERS
- HOT PLATES

Dealers: Write Today for YOUR COPY and Prices.

PEERLESS MFG. CORP.
LOUISVILLE, KENTUCKY

ing device should be marked with the level allowed at various temperatures.

(8) The length and diameter are desired so that inspectors can determine the location of the tank underground without the need of excavating.

(d) Markings on aboveground systems are essentially the same as for underground systems. *Section (e)* specifies the markings that must be on the container.

(f) What are the reasons for the requirements of this section?

This section does not prohibit filling tanks after dark, but indicates it is not a desirable practice. If artificial light is required, the type of equipment that may be used is specified. The reason for frowning on filling customers' tanks after dark is not because the employes handling the product will not take precaution as much as it is to prevent fires that might be caused by the approach to a filling operation by a person carrying an open flame or spark making light. Some accidents have been caused by such ignitions, and unless absolutely necessary and unless proper precautions are used, delivery should be made in daylight hours. In all industry the possibility of accidents is greater in the hours of darkness, and more so in handling inflammable materials.

(7) Why is the capacity of a tank limited to 30,000 gals?

When the code was written up there were a number of persons of the opinion that the maximum capacity should be less than this amount, using as a reason that too great an amount of liquid gas should not be

kept in a single container, as the amount that would be released due to failure would be liable to cause large damage. The ones arguing against this claimed that containers should not be designed so they may fail. Some industrial plants may require storage ranging as high as 500,000 gals., and the complication of piping and manifolding a group of small tanks presented an equal if not greater hazard. The figure of 30,000 gals. was a compromise between the two groups, as most tanks built up to the present time contain no more than this and these orders specifically exempt gas making plants, tank farms and refineries where large storage might be most likely used. Anyone contemplating storage of this capacity, or greater, should obtain engineering advice with particular reference to foundation design and shell loading due to weight of container and contents. These particular problems are not covered specifically in either the API-ASME or ASME Codes.

(To Be Continued)

◆ ◆

Odessa, Mo., Gets Bulk Plant

The Town and Country Gas Service has completed installation of its new bulk plant at Odessa, Mo. The plant has a capacity of 4400 gals., the equivalent of 500,000 cu. ft. of natural gas, or enough, it is said, to supply gas for a month to a city with a population of 2200.

A new 500-gal. delivery tank truck has also been purchased. The bulk plant will be serviced out of Kansas City by a 3000-gal. transport truck of the Philgas Department, Phillips Petroleum Co.

why you should use ANCHORGAS butane propane

1. **Our business is 100% wholesale—we will never be your competitor.**
2. **Our sales organization specializes in the distribution of Butane and Propane only. It is not a sideline with us and therefore you are assured of our personal attention.**
3. **Our products are of the highest quality obtainable anywhere. Prompt deliveries by tank cars or trucks.**
4. **A year 'round supply guaranteed to all contract customers.**

ANCHOR

PETROLEUM COMPANY

ATLAS LIFE BLDG. TULSA, OKLA.

SPRAGUE
METERS
for
PROPANE-BUTANE SERVICE
●
Write for Particulars
SPRAGUE METER
COMPANY
Bridgeport, Conn.

The
CARTER
OIL COMPANY
Tulsa, Oklahoma
Manufacturers
and
Suppliers
of dehydrated
PROPANE and BUTANE
for the distributing and industrial trade. Shipping point: Seminole, Oklahoma.
●
Address inquiries to:
Marketing Department
Room 928, National Bank
of Tulsa Building
Tulsa, Oklahoma

Gerald E. Stedman Joins Bastian-Blessing Co.

The appointment of Gerald E. Stedman as sales manager, Rego division, has been announced by Ellsworth L. Mills, vice president in charge of sales of the Bastian-Blessing Co., manufacturers of extensive lines of equipment in the gas welding, cutting, liquefied petroleum gas and soda fountain fields.

G. E. STEDMAN

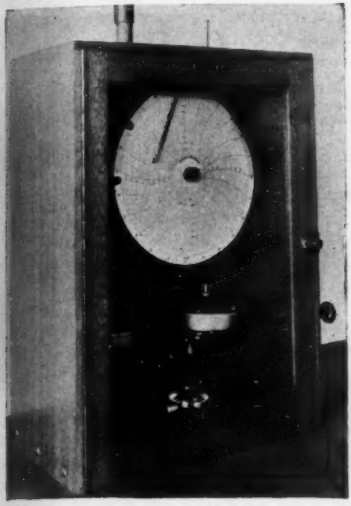
Mr. Stedman is nationally known in merchandising, research, sales training and public relations circles. A business writer for many trade publications, he has maintained national contact with more than 10,000 merchants and salesmen and is a strong exponent of basing sales programs on actual field experience. Under his direction the Rego division expects to establish a new note in industrial selling which will be attuned to streamlined methods of marketing and the adaptation of successful merchandising ideas to technical selling requirements, all based upon the belief that marketing practice is as susceptible to improved design as are products.

◆ ◆

Glover Oil Co. Builds Bulk Plant at Tracy, Calif.

The Glover Oil Co., of Tracy, Calif., has expanded its business activities to include a program for distributing butane gas in Tracy and surrounding territory. A 9000-gal. storage tank has been installed near town and two new tank delivery trucks have been added to equipment.

N. M. DeArman, with the company for the past five years, has been appointed sales manager for the butane department, and states that the company will give special attention to installing equipment and providing fuel for tractors, trucks, stationary engines and domestic use.



NO MOTORS OR
COMPLEX MECHANICS

Anubis Recording
GAS GRAVITOMETER

The ANUBIS Recording Gas Gravitometer is a direct-weighing instrument that produces a highly accurate, temperature-compensated record of the specific gravity of gases. No electric motors or other mechanical complexities are used. The chart record reads direct to the second, and by easy and very close approximation, to the third place of decimals. A free bulletin giving all details awaits your request.

American Recording Chart Co.
3113 E. 11th St., Los Angeles, Calif.
510 S. Lansing Ave., Tulsa, Okla.

Low Cooking Bills
BUILD HIGH SALES CURVES!

The New Mighty-Mite Burner with its high efficiency and low fuel consumption will give new impetus to bottled gas sales. Then just for good measure, Tappan gives you their other big features—Cove Top • Bowl Burners • Visualite Oven • Serva-trays.

THE TAPPAN STOVE CO.
Mansfield, Ohio

The New Tappan
MIGHTY-MITE BURNER
has speed, yet provides a very low simmering flame for "waterless" cooking.

TAPPAN *GAS RANGES*

Announcing Distributorship

Forster

Burners and Torches
in Southern California

Hackney
MILWAUKEE

Complete stock of Pressed Steel I. C. C. Cylinders in Los Angeles for immediate delivery.

Always In Stock

Butane Tank Fittings, Butane, Natural Gas Instruments, Domestic Regulators, Pigtails, Tanks, Gauges, Forged Brass Fittings, Dry-gas Butane Filters.

Automotive Installations

ELECTRIC AND CARBURETOR ENGINEERING CO.

"Pioneers of the Butane Industry"

2323 E. 8TH ST. LOS ANGELES

TRUCK TANKS

and

BULK STORAGE TANKS

A.S.M.E. Code Construction

Write for prices—specifications—further information

Manufacturers of the GEST-CO line of Truck Tanks

GENERAL STEEL TANK CO.

Steel Plate Fabrication

BIRMINGHAM, ALA.

Butane Equipment Co. Occupies New Building in Downey, Calif.

The Butane Equipment Co., located in Downey, Calif., is now making butane power and domestic installations, according to F. M. Woodward, owner of the organization.

The company will sell butane for automotive use and will deliver fuel to domestic users throughout this section. A dispensing truck will be equipped in the near future for this work and a complete fueling station will be made available.

Mr. Woodward has constructed a new building at 318 W. Firestone Blvd. in Downey. The structure is 30x60 ft. and provides a large area for truck and tractor installations. The shop is modern, well equipped, and prepared to handle many installations each month.

Mr. Woodward has been manufacturing and installing wind machines for the prevention of frost in citrus orchards for a number of years. He plans to continue this work and will use butane for power units wherever possible.

◆ ◆

L. A. Pedersen Is Sales Manager For Northwest Hydro Gas Co.

Announcement has been made that L. A. Pedersen has been made vice president and sales manager of the Northwest Hydro Gas Co., Minneapolis. He was formerly sales manager of the Jacobs Wind Electric Co., of Minneapolis, and operated retail stores in eastern Montana.

Other officers of the company are Charles D. Bubar, president; John Turney, vice president and George Bubar, secretary-treasurer.

◆ ◆

Robert Wellington Is New Pipestone, Minn., Manager

Robert Wellington, of Des Moines, Iowa, took over the management of the Pipestone, Minn., Skelgas Bottling Plant on May 1. He replaced S. C. Pusey, who has been manager since the plant opened last Fall, and who has been transferred to a similar plant in Moline, Ill.

CROWN WATER HEATER

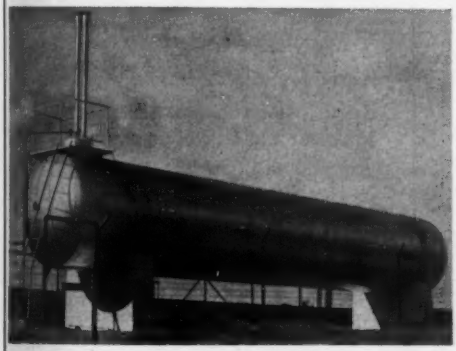
We've just what you want!

A WATER HEATER WITH . . .

Quality clear through • Dependability
Unexcelled Beauty • Fiberglass Insulation
Efficiency Beyond Compare
. . . Approval of the American Gas Association for Liquefied Petroleum Gases.

YOU are invited to visit our display at the SANTA BARBARA CONVENTION.

CROWN WATER HEATER CO.
COMPTON, CALIFORNIA



18,000 Gallon Water — 15,000 Gallon Liquid Propane Capacity Storage Tank 8'-0 - 1/16" I. D. by 50'5¼" long, 200 lbs. per square inch working pressure.

Complete bulk plants designed, fabricated and installed by experienced men. Detailed information and estimates furnished without obligation.

LEADERSHIP!

Quality - Safety
Economy

Butane-Propane tanks fabricated in strict accordance with the ASME code; API-ASME Code; Dept. of Public Safety, Commonwealth of Massachusetts; and National Board of Boiler & Pressure Vessel Inspectors regulations.

Bulk Tanks - Skid Tanks
Truck Tanks
for
Butane • Propane
Butane-Propane Mixtures

LANCASTER IRON WORKS, INC.
LANCASTER PENNA.

Efficiency

H - 122 Gearhead
Motor Driven Unit

Time tested, with proven efficiency, this Harman Rotary, Butane-Propane Pump, for storage plants and service stations, guarantees perfect service on all L.P.G. jobs. Developed by Harman Pacific Co. over a period of years, this "proven" pump will give lasting service due to: absence of contacting metal parts and low friction bearings.

Distributors Wanted - Eastern, Mid-Western, Southern Territories.

HARMAN PACIFIC CO.
"Since 1922"
1122 Santa Fe Ave., Los Angeles

Wholesalers
STABILIZED

BUTANE

- Bulk plants located at strategic locations for delivery direct to your trucks.
- Numerous sources of guaranteed supply.
- We also operate a fleet of transports in several states, delivering directly to dealer bulk plants.

Exclusive Distributors
SMITH STEEL TANK CO.
Manufacturers of A.S.M.E. code tanks

R. J. ALLISON CO.
P. O. Box 23 **TULSA, OKLA.**

"Advice to Brides" Features Advertising Campaigns

Tying in an advertising campaign to seasonal influences was recently undertaken by Green's Fuel, Inc., Sarasota, Fla., when the company's many dealers were provided with newspaper mats which featured the June bride.

The first ad, carrying a drawing of a typical bride, offered a reward of $25 in credit allowance to every bride who, during June, purchased a modern gas range for installation on Green's Fuel gas.

The second, under the general caption of "Advice to Brides," was headed, "He's Hooked, But Don't Lose Him," and followed by suggestions which will keep a man in line, the most important of which is to feed him the quick, economical, delicious way—through gas cooking, of course.

An independent newspaper campaign conducted by the Natural Gas & Appliance Co., the Green's Fuel distributor in Orlando, Fla., offered a free Ruud automatic water heater with the purchase of a specially promoted gas range.

All campaigns attracted much favorable attention and resulted in profitable returns, according to K. H. Koach, general manager of Green's Fuel.

◆ ◆

Robt. Mueller, Vice President Mueller Co., Passes Away

Robert Mueller, vice president in charge of public relations of the Mueller Corp., Decatur, Ill., passed away March 27, on his seventy-sixth birthday. Mr. and Mrs. Mueller were spending the winter in Florida, and at the time of his death were at Bradentown.

◆ ◆

E. E. Tattersfield Appointed Forster Distribtuor

The Electric and Carburetor Engineering Co., of Los Angeles, was appointed distributor of Forster burners and torches for Southern California, in June, according to E. E. Tatterfield, head of the organization. The Forster line is owned by the Ransome Co., of Emeryville, Calif.

Automatic Gas Equipment Co.

Offers "Your" Customer Economy and Convenience

Sell "them" the Convenience, the Economy, the lasting Satisfaction of AUTOMATIC and EVEREADY Gas Systems for ease in cooking, for a plentiful supply of hot water, for home refrigeration, for heating! Nationally known . . . automatic operation . . . A.S.M.E. code built . . . expertly engineered . . . approved Underwriters' Laboratories.

Write, Phone or Wire For Complete Information

Automatic Gas Equipment Co.
2216-18 COMMERCE ST.
DALLAS, TEXAS

LIGHT!

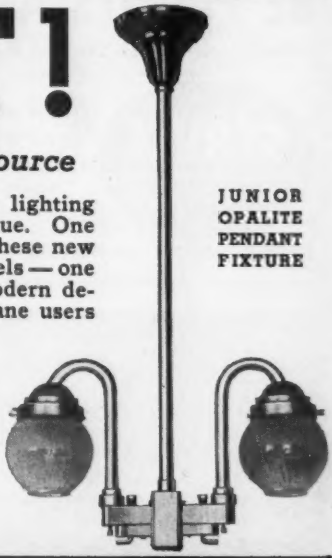
New BUTANE-PROPANE *Profit Source*

JUNIOR OPALITE MODEL

Now you can add greater lighting profits to your source of revenue. One test of the glare-free glow of these new Humphrey Opalite Junior models — one glance at the beauty of the modern designs — and most Butane-Propane users are ready for an installation.

The Junior Opalite Model at the left has an input rating of 2500 B.T.U. per hour. The Pendant Fixture with two globes has a rating of 5000 B.T.U. an hour.

Write today for full information about the complete line of Humphrey appliances for Butane-Propane gas.



JUNIOR OPALITE PENDANT FIXTURE

GENERAL GAS LIGHT CO., Kalamazoo, Mich.

ECONOMY Installations Build Increased PROFIT

• ECONOMY Ranges insure the dependable performance of installations. That's why distributors say they are real profit-builders. Engineered particularly for propane and butane gas, ECONOMY Ranges are priced right, made right.

Investigate ECONOMY Household and Commercial Ranges. Write for 1940 catalogs today.

Comstock-Castle Stove Co., Quincy, Ill.

Tight Connections! NO THREADS— SPEED, SAFETY ECONOMY

Ever-Tite Couplings are designed for pressures to 3000 lbs. in sizes from ½ in. to 8 in. **Write for Full Information**

EVER-TITE COUPLING CO.
254 West 54th St. New York, N. Y.

BE PROFITS AHEAD
—SELL GAS REFRIGERATION

The **SERVEL** ELECTROLUX *Gas Refrigerator*

Runs anywhere on **BOTTLED GAS TANK GAS**

FREEZES SILENTLY-NO MOVING PARTS

VULCAN COMMERCIAL COOKING EQUIPMENT IS A BIG LOAD-BUILDER!

Sell more ranges, ovens, broilers, deep-fat fryers. Write for promotion plan and nearest sales office.

Standard Gas Equipment Corp.
18 East 41st Street, New York

C. I. Watson Is Bu-Gas Dealer For Williams, Ariz.

With the appointment of the C. I. Watson Plumbing and Heating Co. as Bu-Gas dealers for Williams, Ariz., local residents and those in surrounding areas will be able to have the conveniences of gas service for domestic appliances. Suitable appliances will be carried in stock.

One of the first installations made was a new gas range and automatic water heater for Rowe's Well recreation center at Grand Canyon.

In anticipation of the enlarged operations which will result from handling LPG, Mr. and Mrs. Watson, owners of the business, have purchased a larger building than the one formerly occupied and have contracted for its complete remodeling to provide for a sales display room and adequate storage quarters. A bulk plant is being built for a supply of gas, which will be shipped in by tank car from Flagstaff.

◆ ◆

American Butane Co. Enters Butane Field in Idaho

The American Butane Co. established an office and dispensing plant in Nampa, Idaho, about March 1, according to Ernest McAfee, engineer for the company.

Truck and tractor conversions constitute a substantial part of the business but domestic installations are increasing. A new transport truck and a complete line of LPG appliances complete the company set-up.

◆ ◆

Moretti Bros.' Off-Highway Station Avoids Traffic

Moretti Brothers have established "Moretti's Truck Depot," a butane dispensing station, in Petaluma, Calif., at Second and C streets. The plant is located off the highway so that long trucks and trucks with trailers will be of no inconvenience to other motor traffic.

One of the innovations being offered by Moretti Brothers is a butane camp cooking outfit that consists of a portable tank of butane and a special camp stove designed for use with LPG.

BURNERS and TORCHES

Especially Designed
For Butane-Propane Gases
For All Purposes
with
Satisfaction Guaranteed

Write for Dealer Discounts

F & E MANUFACTURING CO.
507 - 55th Street, Oakland, Calif.

BUTANE TANKS
(ALL CODES)

Designers - Engineers
Fabricators - Erectors
Above and Below Ground
Bulk, Transport, Mobile and Skid Tanks

KING BROS., INC.
3500 S. E. 17th Ave. Portland, Ore.

BUTANE-PROPANE
EQUIPMENT
for
Protected Dealership

SOUTHWEST FACTORY
OKLAHOMA CITY
OKLAHOMA

Style No. 60

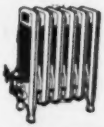
Won't Leak, Stick or Bind

CHIKSAN Ball-Bearing Swing Joints are Butane and Propane tight. Made in 17 different styles for pressures to 3,000 lbs.

Write for Catalog
CHIKSAN TOOL COMPANY
BREA, CALIFORNIA

CLOW GASTEAM RADIATORS

Make Their Own Steam Heat With Any Gas



Send for Copy of Our Architects Manual

JAMES B. CLOW & SONS
201-299 North Talman Avenue, Chicago, Ill.

STEEL BUTANE TANKS
HIGH PRESSURE VESSELS
for all purposes

LACY MFG. CO.
Founded 1887 "Experience Counts"
Office 601 Washington Bldg.
Plant 1000 N. Main
LOS ANGELES CALIFORNIA

RUUD
WATER HEATERS
ALL TYPES AND SIZES . . .
COMPLETE SALES HELPS . . .
Write for Details
Ruud Manufacturing Company
Pittsburgh, Pa.

STOP BUTANE LEAKS with RECTORSEAL

Apply RECTORSEAL to every threaded or gasket connection on consumer tanks, bulk storage and truck tanks. RECTORSEAL forms a plastic, elastic mass impervious to Butane, and all other fractions of petroleum. It makes a permanent leak-proof seal, yet permits easy breakout. Sold in 1 gal., ½ gal., 1 qt., 1 pt. and ½ pt. container sizes. A Product of RECTOR WELL EQUIPMENT CO., INC., Fort Worth, Texas.

RECTORSEAL
TRADE MARK REG. U. S. PAT. OFF.
THE POSITIVE LEAK PREVENTER

ADVERTISERS' INDEX

Allison Co., R. J. 92
American Liquid Gas Corp. 63
American Meter Co. 6
American Pipe and Steel Corp..... 86
American Radiator & Standard Sanitary Corp. 37
American Recording Chart Co. 89
Anchor Petroleum Co. 87
Anderson Stove Co. ..... —
Automatic Gas Equipment Co. 93

Barber Gas Burner Co., The..... 68
Bastian-Blessing Co., The.....48, 49
Blodgett Co., Inc., The G. S. 1
Brodie Co., Inc., Ralph M. ..4th Cover
Bryant Heater Co., The..... 71
Byron Jackson Co. 39

Carter Oil Co., The..... 88
Chiksan Tool Co. 95
Clow & Sons, James B. 95
Comstock-Castle Stove Co. 94
Crown Stove Works..... 76
Crown Water Heater Co. 91

Dallas Tank & Welding Co., Inc... 75
Daniel Orifice Fitting Co. 84
Dickerson Manufacturing Co. 70
Downingtown Iron Works..... —

Electric & Carburetor Engrg. Co... 90
Ensign Carburetor Co., Ltd. 59
Ever-Tite Coupling Co. 94

F & E Manufacturing Co. 95
Fisher Governor Co. 77
Florence Stove Co. 41
Folsom Co., The..... 82

General Controls 80
General Gas Light Co. 93
General Steel Tank Co. 90
Glo-Fire Co. ..... —
Granberg Equipment, Inc. 81

Hanson, Roy E. 53
Harman Pacific Co. 92
Hotstream Heater Co., The..... 83

Kerotest Manufacturing Co. 70
King Bros. 95

Lacy Manufacturing Co. 95
Lancaster Iron Works, Inc. 91

Mallinckrodt Chemical Works..... 76
McNamar Boiler & Tank Co..... 82
Merco Nordstrom Valve Co. ..... —
Merit Water Heater Co. ..... —

National Butane Gas Co. 84

Ohio Foundry and Manufacturing Co., The 80

Pacific Gas Radiator Co. 45
Parkhill-Wade 3
Payne Furnace & Supply Co., Inc. .. 42
Peerless Manufacturing Corp. 86
Philgas Department, Phillips Petroleum Co. 62
Pittsburgh Equitable Meter Co. ..... —
Pressed Steel Tank Co. .....2nd Cover

Ransome Co. 57
Rector Well Equipment Co., Inc. .. 95
Refinery Supply Co., The..... —
Reliance Regulator Corp. 5
Robbins & Myers, Inc. 65
Robertshaw Thermostat Co. 74
Rochester Manufacturing Co., Inc. 51
Roney, Inc., L. C. 74
Roper Corp., Geo. D. 55
Round Oak Co. ..... —
Ruud Manufacturing Co. 95

Scaife & Sons Co., Wm. B. ..3rd Cover
Servel, Inc. 94
Shell Oil Co., Inc. 67
Smith Meter Co. 85
Smith Precision Products Co. 69
Southern Steel Co. 47
Southwest Factory, The..... 95
Sprague Meter Co. 88
Standard Gas Equipment Corp. 94
Standard Oil Co. of California..... —

Tappan Stove Co., The..... 89

Viking Pump Co. 66

Ward Heater Co. 61
Warren Petroleum Corp. 68
Wickstrom, Harold W. ..... —
Wood Manufacturing Co., A. R. —

SCAIFE
THE IDEAL CYLINDER FOR YOUR BOTTLED GAS
IT'S STREAMLINED FOR BEAUTY!
IT'S SCAIFE FOR SAFETY! IT'S DEPENDABLE!
WM. B. SCAIFE & SONS CO.
General Offices and Works: OAKMONT, (Pittsburgh District) PA.

BUTANE DELIVERY READINGS CA

WITH BRODIMATIC *Error Proof* COUNTER

On Butane deliveries, Brodie Meters and "automatic-totalizing" Brodimatic Direct-Reading Counters protect delivery readings from errors that would inevitably result in losses, disputes and costly delays. "Guessed-at" dial computations and erroneous mental calculations are completely eliminated by large distance-spanning legible numbers that furnish simplified totals—always plainly in full view. Write today for complete details.

- ★ DIRECT TOTALIZED READINGS
- ★ "SNAP-ACTION" NUMERAL CHANGE
- ★ DISTANCE-SPANNING VISIBILITY
- ★ SPACE-SAVING COMPACTNESS

BRODIE METERS

RALPH N. BRODIE CO., INC.

9[illegible] 61st Street, OAKLAND, CALIFORNIA, U. S. A.
Cable Address: "BRODICO" • Division Offices: Chrysler Bldg., NEW YORK CITY • 5[illegible] East Wacker Drive, CHICAGO • 2[illegible] Canton Street, DALLAS, TEXAS
REPRESENTATIVES & STOCKS IN ALL PRINCIPAL CITIES

BRODIMATIC ERROR-PROOF